G. B. Reed Groundfish Cruise No. 82-2, July 12-29, 1982

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December 1982

Canadian Data Report of Fisheries and Aquatic Sciences No. 372

Canadian Data Report of Fisheries and Aquatic Sciences

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Rapport statistique canadien des sciences halieutiques et aquatiques

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Cat. No. Fs 97-13/372 ISSN 0706-6465

ABSTRACT

Westrheim, S. J., W. R. Harling, M. Yamanaka, and G. Seaton. 1982. G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982. Can. Data Rep. Fish. Aquat. Sci. No. 372: iii + 53 p.

During July 1982, trawl and echo-sounder surveys were conducted in Queen Charlotte Sound to investigate the distribution and abundance of Pacific cod (Gadus macrocephalus), rock sole (Lepidopsetta bilineata), and lingcod (Ophiodon elongatus). Hydrographic stations were occupied in Queen Charlotte Sound and Hecate Strait. Surficial sediments were sampled on various sections of Cook and Goose Island banks in Queen Charlotte Sound. Technological studies on arrowtooth flounder (Atheresthes stomias) were completed.

Abundance, or at least availability, was low, during the survey period, for Pacific cod, rock sole, and lingcod. Extensive portions of Cook and Goose Island banks shallower than 40 fm (73 m) were deemed untrawlable (without a bobbin groundline), based on echo sounder surveys.

Key words: Pacific cod, distribution, abundance, length-frequency, hydrography, surficial sediments, Queen Charlotte Sound, Hecate Strait.

RÉSUMÉ

Westrheim, S. J., W. R. Harling, M. Yamanaka, and G. Seaton. 1982. G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982. Can. Data Rep. Fish. Aquat. Sci. No. 372: iii + 53 p.

En juillet 1982, on a effectué des levés au chalut et au sondeur acoustique dans le bassin Reine-Charlotte afin d'étudier la répartition et l'abondance de la morue du Pacifique (Gadus macrocephalus), de la sole du Pacifique (Lepidopsetta bilineata) et de la morue-lingue (Ophiodon elongatus). Des stations hydrographiques ont été occupées dans le bassin Reine-Charlotte et le déroit d'Hécate. Les sédiments superficiels ont fait l'objet d'échantillonnages à divers endroits des bancs des îles Goose et Cook, dans le bassin Reine-Charlotte, et des études techniques sur la plie à grande bouche (Atheresthes stomias) ont eu lieu.

L'abondance, ou au moins la disponibilité, de la morue du Pacifique, de la sole du Pacifique et de la morue-lingne était peu élevée au cours du levé. De grandes parties des bancs des îles Goose et Cook ont été jugées impossibles à exploiter au chalut (sans une ligne de sphères), d'après les levés acoustiques.

Mots-clés: morue du Pacifique, répartition, abondance, fréquence des longueurs, hydrographie, sédiments superficiels, bassin Reine-Charlotte, détroit d'Hécate.

INTRODUCTION

G.B. REED Groundfish Cruise 82-2 was conducted during July 12-29, 1982. Primary purpose of the cruise was to investigate the distribution and abundance of Pacific cod (Gadus macrocephalus), rock sole (Lepidopsetta bilineata), and lingcod (Ophiodon elongatus) in Queen Charlotte Sound (Fig. 1). Secondary purposes were to collect water temperature and salinity data in Queen Charlotte Sound and Hecate Strait, and to "map" the bottom (by grab and echo sounder) of Cook and Goose Island banks (Queen Charlotte Sound). In addition, technological tests were conducted on arrowtooth flounder (Atheresthes stomias) by personnel from the Vancouver Technological Laboratory.

Two port calls were made, both at Port Hardy--July 13 to load ice for technological experiments with arrowtooth flounder; and July 22 to disembark technologists.

MATERIALS AND METHODS

Abundance and distribution of target species were investigated with a SIMRAD EK-38 sounder and the standard Granton (eastern) on-bottom trawl, equipped with a rubber-disc groundline (see Appendix Table 1 for description). Specimens of all fish species sampled for size composition were measured fork length to the nearest centimeter.

Water temperatures were collected with a mechanical bathythermograph (BT) or expendable bathythermograph (XBT). Water samples for salinity determination were collected with Nansen bottles. Salinities were determined by salinometer at the Pacific Biological Station.

Surficial sediments were collected with a Shipek bottom grab, and preliminary analysis was undertaken at time of collection. The samples will be forwarded to the Geo-Science Center (Patricia Bay, B.C.) for detailed analysis.

Results of the technological studies of arrowtooth flounder will be reported elsewhere.

RESULTS

GENERAL

A total of 26 trawl hauls were completed, of which 22 were deemed usable (Fig. 2). Following is a summary of the total catch, by species:

Species	Catch (kg)	%
Arrowtooth flounder (turbot)	4,817	37.1
Sablefish	1,647	12.1
English sole	729	5.6
Rex sole	685	5.3
Halibut	535 (141)[a]	4.1
Rock sole	518	4.0
Dover sole	458	3.5
Silvergray rockfish	454	3.5
Pacific ocean perch	449	3.5
Ratfish	379	2.9
Canary rockfish	372	2.9
Pacific cod	366	2.8
Dogfish	265	2.0
Lingcod	240	1.9
Other[b]	1,054	8.1
Total:	12,968	99.9

[a]Number in parentheses.
[b]All species or species groups comprising less than 1.5% each.

Detailed records by haul are contained in Appendix Table 1.

A total of 5,048 specimens (comprising 11 species) were sampled for fork length (Table 1). Pacific cod specimens totalled 233, from which second-dorsal fin rays were collected from 57 smaller ($\leq$ 47 cm) specimens. Rock sole specimens totalled 850, from which otoliths were collected from 203. Lingcod specimens totalled 41, from which no age structures were collected. Length measurements were collected from all halibut caught. Detailed records of length frequencies by species and haul are contained in Appendix Tables 2-8 (as noted in Table 1).

Hydrographic stations occupied totalled 75--42 in Queen Charlotte Sound (south of 51°56'N lat.) and 33 in Hecate Strait (Fig. 2, 3). Salinity samples were collected at seven of these--four in Queen Charlotte Sound, and three in Hecate Strait. Surficial sediment samples were collected at 30 locations, all in Queen Charlotte Sound. Appendix Table 9 contains detailed records on time and location of each hydrographic and geological station. Appendix Tables 10 and 11 contain temperatures at standard depths (m) for each XBT and BT cast respectively. BT temperatures are considered to be less accurate than XBT temperatures.

In Hecate Strait, mean temperature was 12.3° at the surface, based on XBT casts (Table 2). Mean bottom temperatures were 10.2-11.0°C at 10-29 fm; 6.5-7.6°C at 40-79 fm; and 4.9-5.9°C at 100-279 fm. Two BT casts were made in Hecate Strait, at Station 33, as a cross-check with the XBT. All instruments produced similar results.

In Queen Charlotte Sound, mean surface temperature was 13.4°C in the north portion and 13.3°C in the south portion, based on XBT casts (Table 2). Corresponding values from BT casts were 13.2°C and 13.5°C (Table 3). In north Queen Charlotte Sound, bottom temperatures were relatively warm at 20-59 fm (7.7-9.5°C by XBT; 7.4-10.6°C by BT); cool at 60-99 fm (6.5-6.6°C vs 6.5-6.8°C); and cold at 180-209 fm (5.0-5.9°C, XBT only). In south Queen Charlotte Sound, bottom temperatures were 7.5°C (XBT) and 7.4°C (BT) at 40-49 fm (no casts were made at depths shallower than 40-49 fm); 6.4-7.1°C (XBT) and 6.4-7.0°C at 50-79 fm; and 5.1°C (XBT) at 200-209 fm. BT temperatures for each station at standard depths, are continued in Appendix Table 12.

Salinities, by standard depth, at each station are contained in Appendix Table 13.

TARGET SPECIES

Studies dealing with distribution and abundance of Pacific cod, lingcod, and rock sole were nullified by our inability to catch these species in reasonable quantities (see text table on p. 2). Pacific cod abundance is apparently approaching, or at, another cyclic low level. Similar situations occurred during 1960-62, and 1969-71 in Queen Charlotte Sound. Our lack of success with rock sole and lingcod can be attributed in part to our inexperience. The current cruise is the first ever to investigate the distribution and abundance of these three species in Queen Charlotte Sound.

ECHO SOUNDER SURVEYS

Echo sounder surveys of Cook Bank and Goose Island Bank were undertaken in considerable detail, primarily because trawling success was so poor. Virtually all of Cook Bank (to 80 fm) and most of the perimeter of Goose Island Bank were surveyed (Fig. 4, 5). Detailed records of the tracklines are contained in Appendix Table 10. Preliminary results indicate that a substantial portion of each bank is untrawlable, and that most of the untrawlable sections are shallower than 40 fms (Fig. 6, 7). Surficial sediment on trawlable portions was almost always sand. "Trawlability" was assessed subjectively, and with reference to the standard Granton (eastern) trawl equipped with a rubber-disc groundline.

ARROWTOOTH FLOUNDER TECHNOLOGY

A 300-fish sample of arrowtooth flounder (turbot) was collected during the first trawling day, and held in ice for up to eight days. Periodically, this lot was sampled. Each sample was filletted, and the fillets frozen. The fillets will be examined at the Technological Laboratory (Vancouver) for parasites; lipid oxidation; protein breakdown; enzyme activity; effects of four amino acid salts on the water-holding capacity of the muscle; and electrophoretic changes reflecting deteriorative myogen alteration.

MISCELLANEOUS

Electrophoresis

Single specimens of each fish species caught were collected and frozen. These will be used at the Vancouver Technology Laboratory to re-test the accuracy of the electrophoretic method of taxonomic identification.

Squid

A collection of squid specimens (Loligo) was frozen for Dr. Breen of the Pacific Biological Station.

Shells

A sample of shells (snail and scallop) was collected for an amateur conchologist in Bamfield.

PERSONNEL

S. J. Westrheim (i/c)	Pacific Biological Station	July 12-29
W. R. Harling	Pacific Biological Station	July 12-29
G. Kawamoto	Vancouver Technological Station	July 12-22
N. Williscroft	Vancouver Technological Station	July 12-22
G. H. Seaton	Pacific Biological Station	July 12-29
M. Yamanaka	Pacific Biological Station	July 12-29

Table 1. Summary of biological sampling (nos. of specimens) by species during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Species	Appendix table no.	Fork length		Age determination	
		Total	By sex	Fin rays	Otoliths
Arrowtooth flounder (turbot)	2	2,440	2,440	-	-
Rock sole	3	850	739	-	205
Pacific ocean perch	6	837	837	-	-
Pacific cod	4	233	233	57	-
Petrale sole	5	227	227	-	-
Sablefish	6	219	-	-	-
Halibut	8	141	-	-	-
Lingcod	7	41	-	-	-
Sandlance[a]	6	37	-	-	-
Curlfin sole	6	13	-	-	-
Pacific sanddab	6	10	-	-	-
Total		5,048	4,476	57	205

[a]Collected from Pacific cod stomachs.

Table 2. Surface and bottom temperatures (°C) determined from expendable BT casts by area and depth interval, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Depth interval (fm)	Hecate Strait (N. of 51° 56')			North Queen Charlotte Sound (51°15'-51°56')			South Queen Charlotte Sound (S. of 51° 15')		
	Mean	N	Range	Mean	N	Range	Mean	N	Range
Surface	12.3	33	10.7-13.8	13.4	20	12.7-14.1	13.3	13	11.6-14.1
10- 19	11.0	3	10.3-12.2	-	0	-	-	0	-
20- 29	10.2	5	9.2-10.8	9.5	2	8.1-10.8	-	0	-
30- 39	-	0	-	8.9	2	8.3- 9.5	-	0	-
40- 49	6.9	1	-	8.0	1	-	7.5	2	7.2- 7.7
50- 59	7.6	5	6.8- 8.3	7.7	1	-	7.1	3	6.8- 7.4
60- 69	-	0	-	6.6	4	6.2- 6.9	6.7	3	6.6- 6.9
70- 79	6.5	4	6.2- 6.9	6.6	3	6.2- 6.8	6.4	3	6.3- 6.6
80- 89	-	0	-	6.5	2	6.4- 6.6	-	0	-
90- 99	-	0	-	6.6	1	-	6.2	1	-
100-119	5.9	4	5.7- 6.0	-	0	-	6.5	1	-
120-139	5.6	4	5.2- 6.1	5.9	3	5.8- 6.1	-	0	-
140-159	5.0	2	4.8- 5.2	-	0	-	-	0	-
160-179	-	0	-	5.3	1	-	-	0	-
180-199	-	0	-	5.0	1	-	-	0	-
200-219	4.9	1	-	5.5	1	-	5.1	1	-
260-279	5.1	1	-	-	0	-	-	0	-

Table 3. Surface and bottom temperatures (°C) determined from mechanical BT casts by area and depth interval, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982. (No BT casts were made in Hecate Strait.)

Depth interval (fm)	North Queen Charlotte Sound (51° 15'-51° 56') Mean	N	Range	South Queen Charlotte Sound (S. of 51° 15') Mean	N	Range
Surface	13.2	11	12.6-13.7	13.5	11	12.6-14.1
10-19	-	0	-	-	0	-
20-29	10.6	1	-	-	0	-
30-39	9.3	1	-	-	0	-
40-49	8.4	1	-	7.4	2	7.1- 7.6
50-59	7.4	1	-	7.0	3	6.8- 7.3
60-69	6.5	3	6.3- 6.7	6.5	5	6.3- 6.8
70-79	6.8	1	-	6.4	1	-
80-89	6.6	2	6.4- 6.7	-	-	-
90-99	6.6	1	-	-	-	-

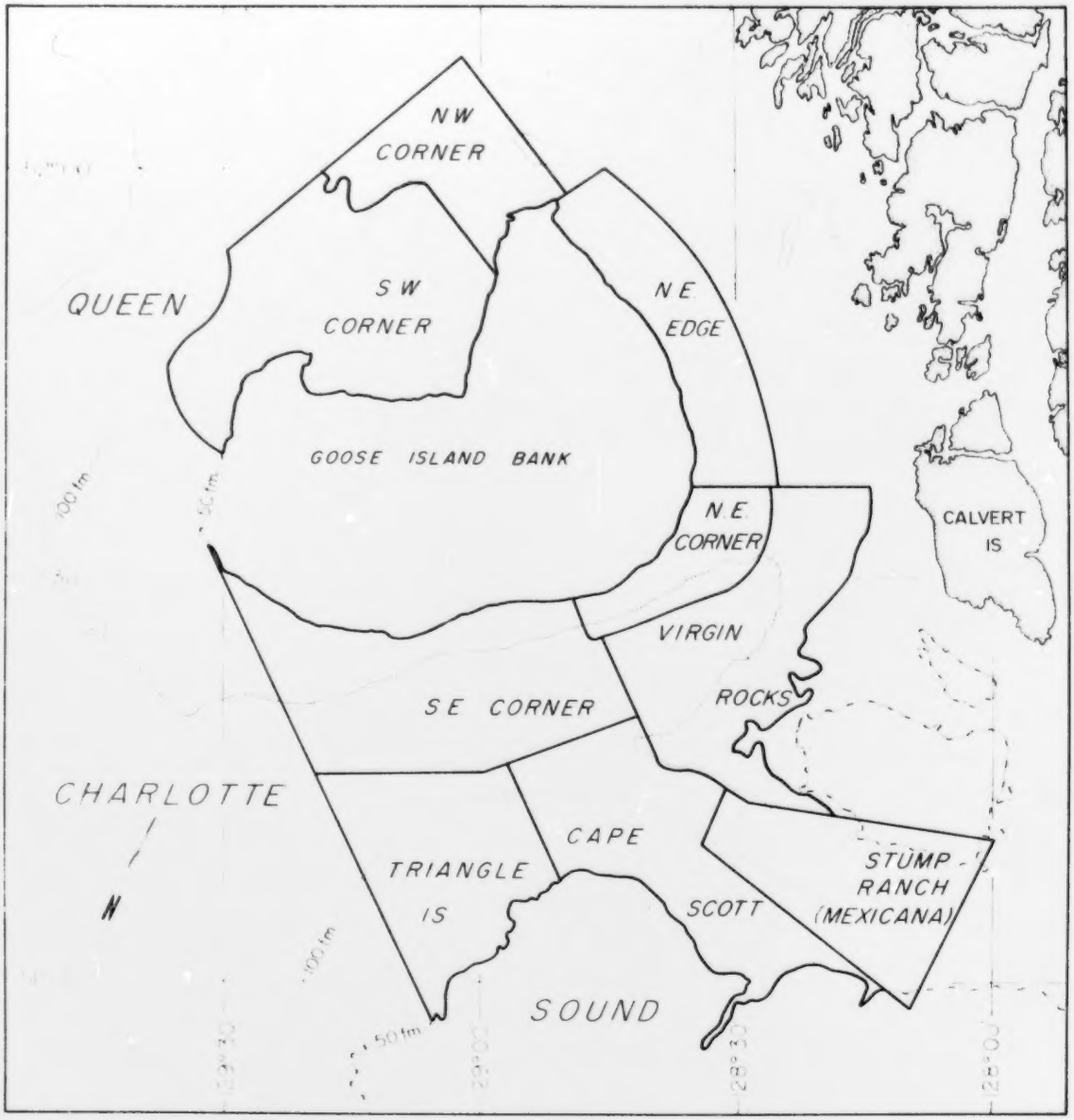

Fig. 1. Chart of Queen Charlotte Sound showing principal fishing grounds.

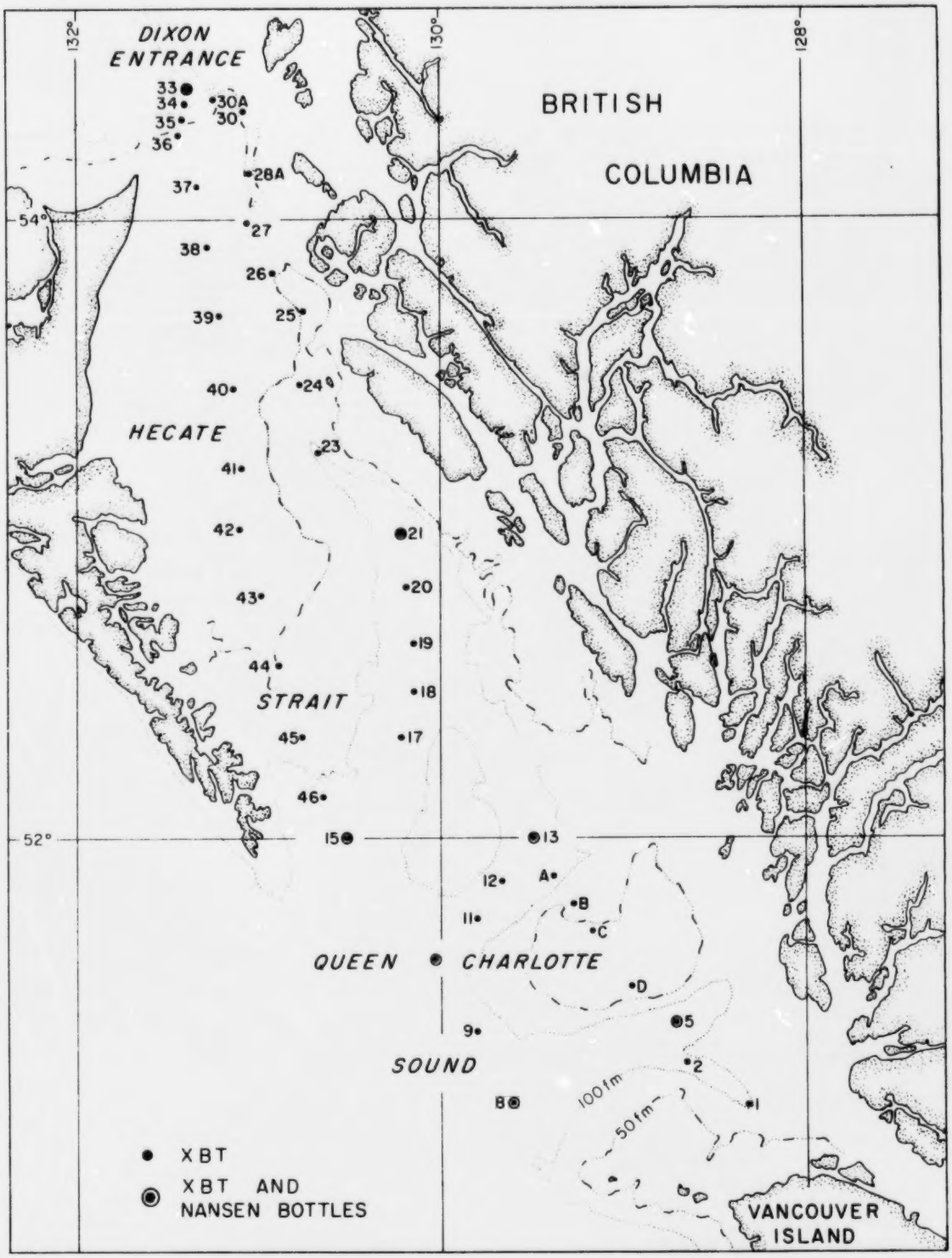

Fig. 2. Chart of Queen Charlotte Sound and Hecate Strait showing locations of hydrographic stations occupied during GBR 82-2, July 1982.

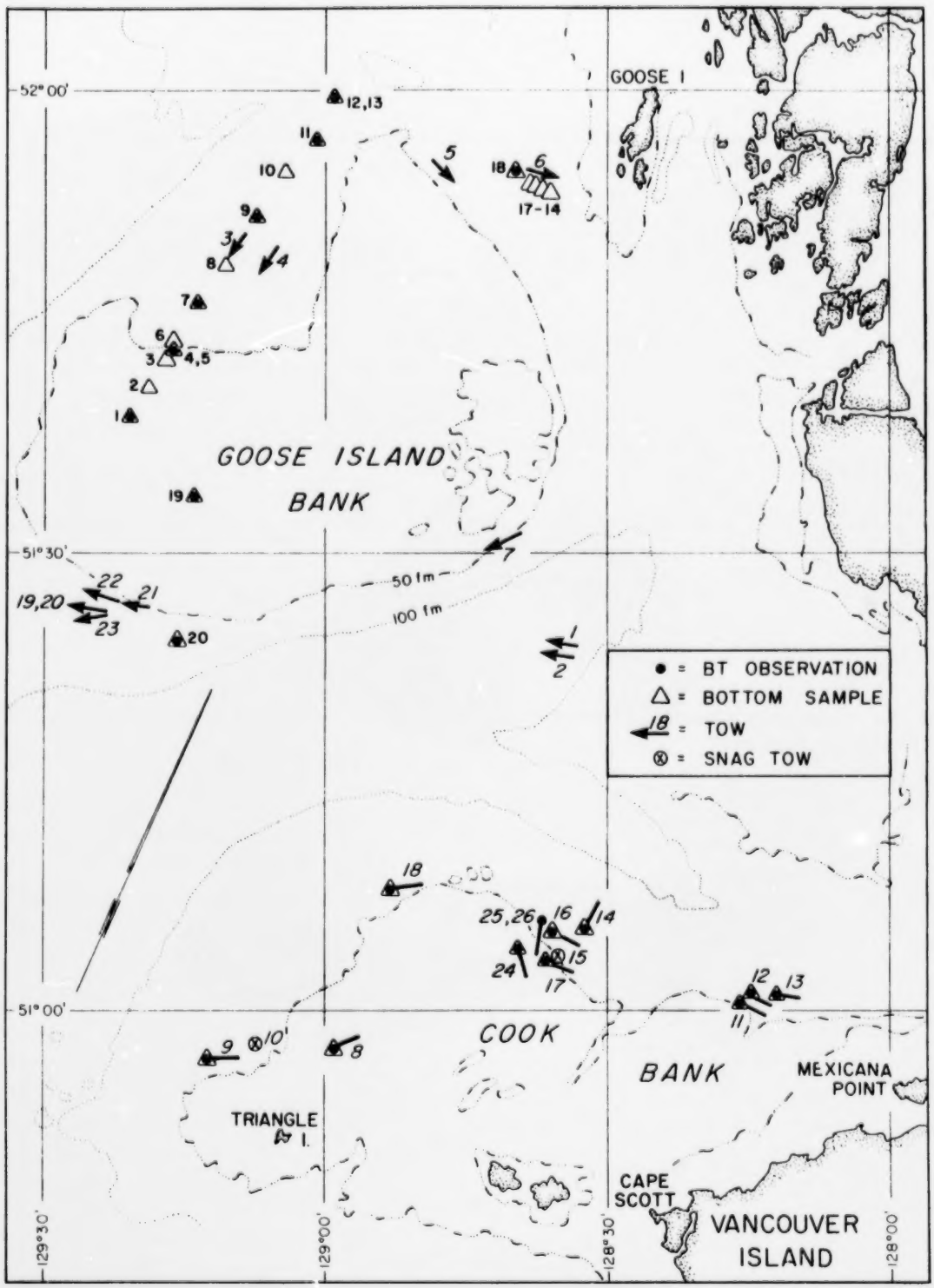

Fig. 3. Chart of Queen Charlotte Sound showing locations of trawl hauls and bottom grab/BT stations completed during GBR 82-2, July 1982.

Fig. 4A. Overlay showing trawlability of bottom. (Shaded area indicates trawlable bottom.)

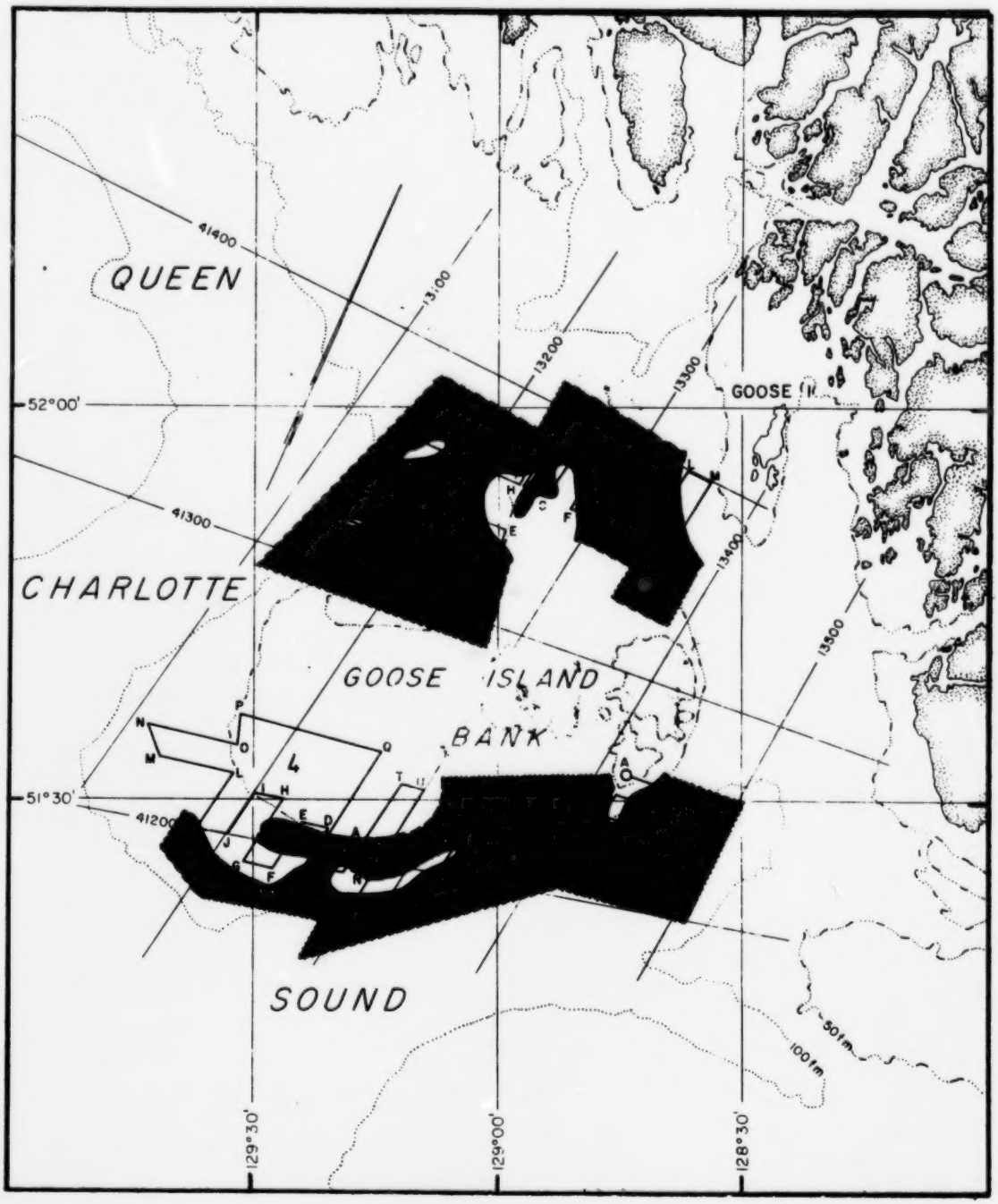

Fig. 4. Chart of Goose Island Bank (Queen Charlotte Sound) showing locations of echo sounder tracklines completed during GBR 82-2, July 1982.

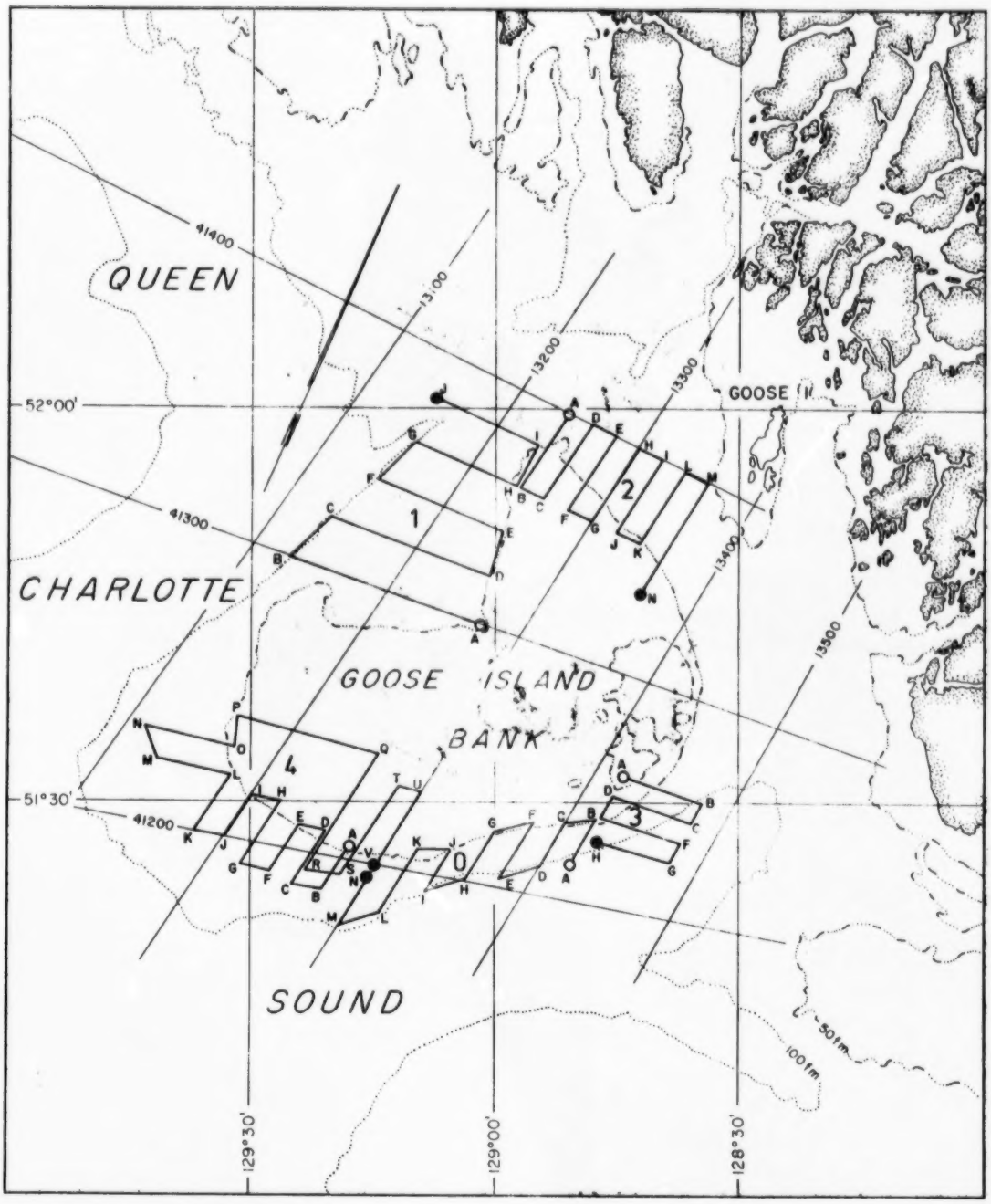

Fig. 4. Chart of Goose Island Bank (Queen Charlotte Sound) showing locations of echo sounder tracklines completed during GBR 82-2, July 1982.

Fig. 5A. Overlay showing trawlability of bottom. (Shaded areas indicate trawlable bottom.)

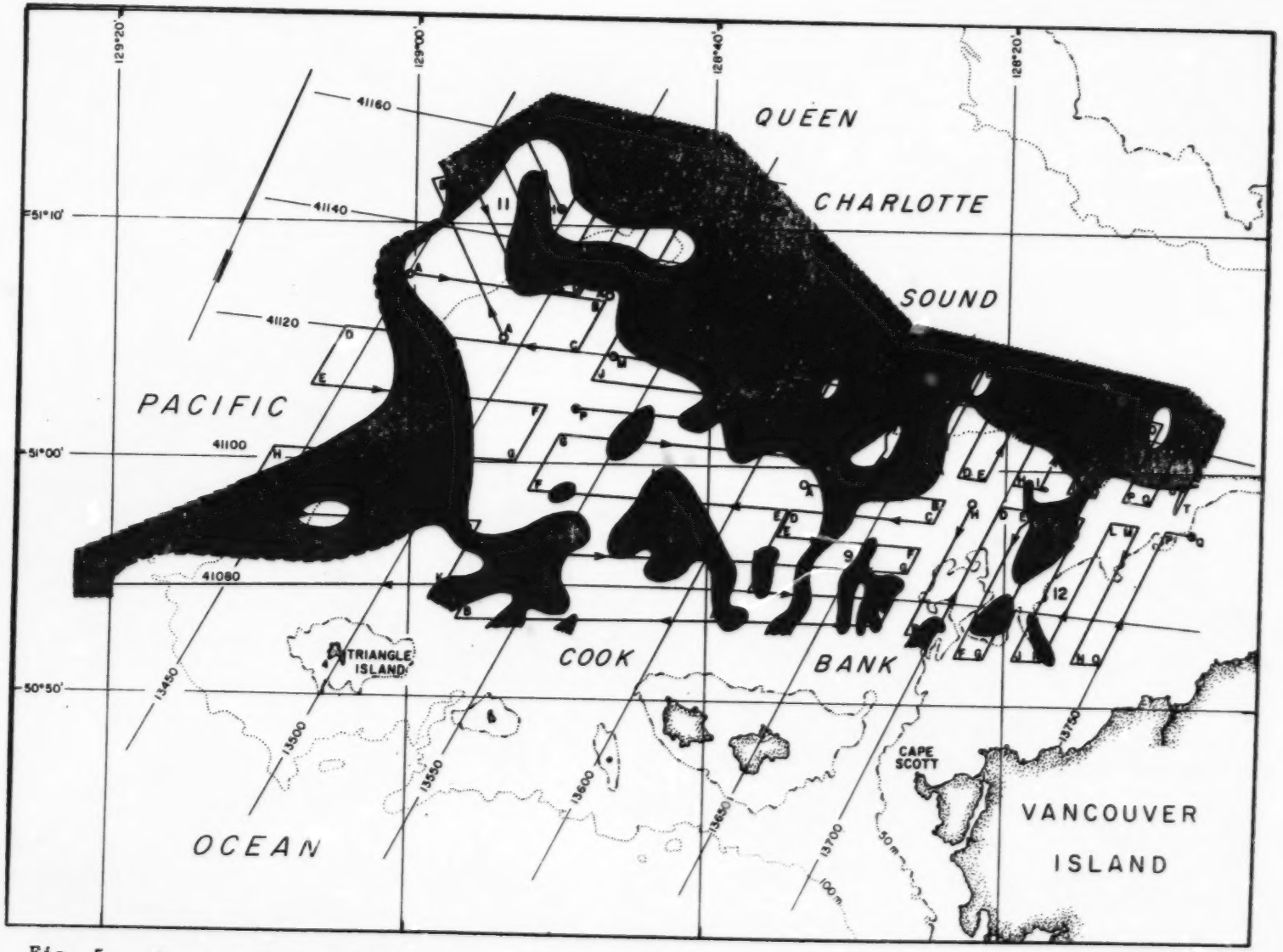

Fig. 5. Chart of Cook Bank (Queen Charlotte Sound) showing locations of echo sounder tracklines completed during GBR 82-2, July 1982.

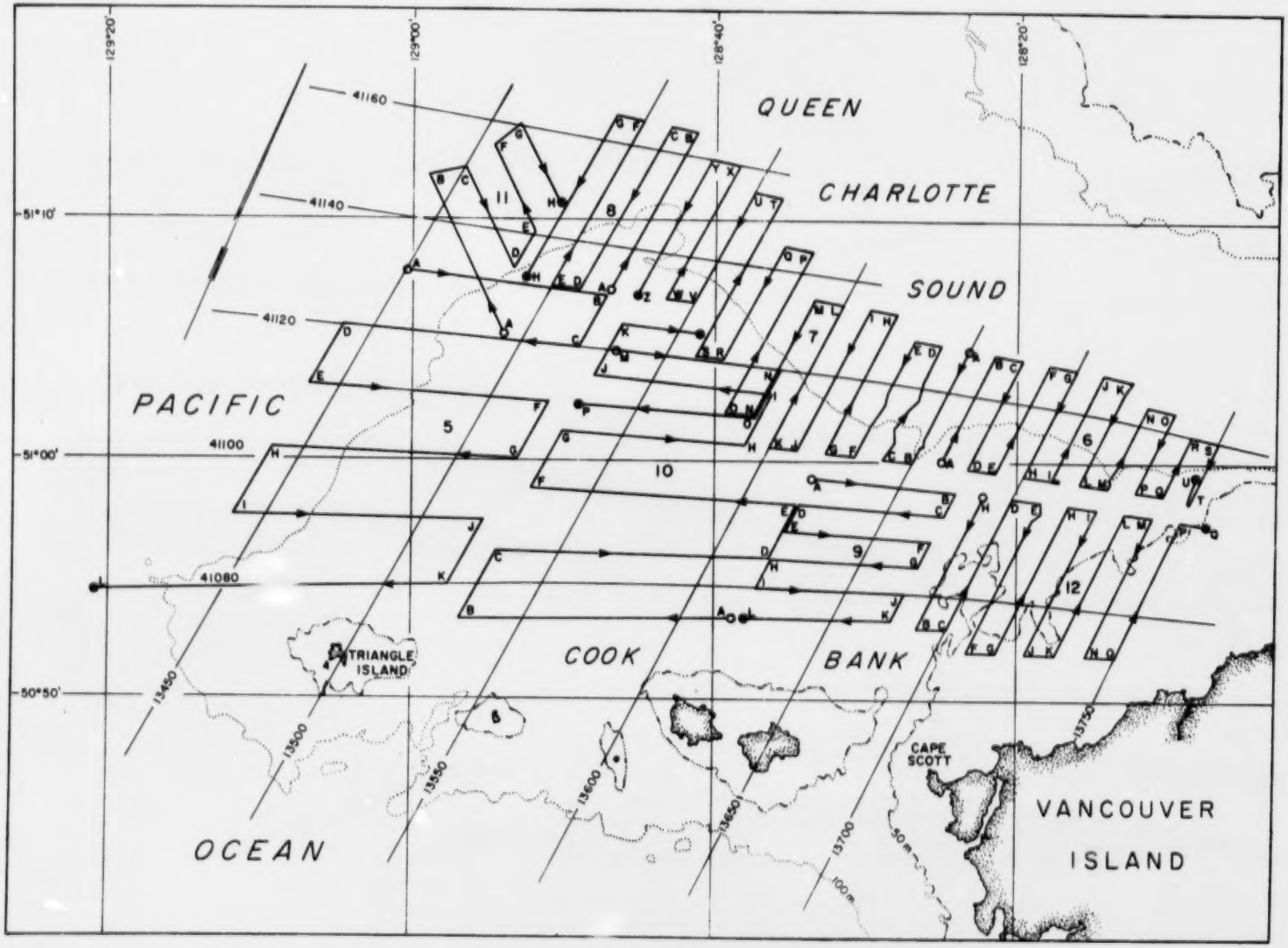

Fig. 5. Chart of Cook Bank (Queen Charlotte Sound) showing locations of echo sounder tracklines completed during GBR 82-2, July 1982.

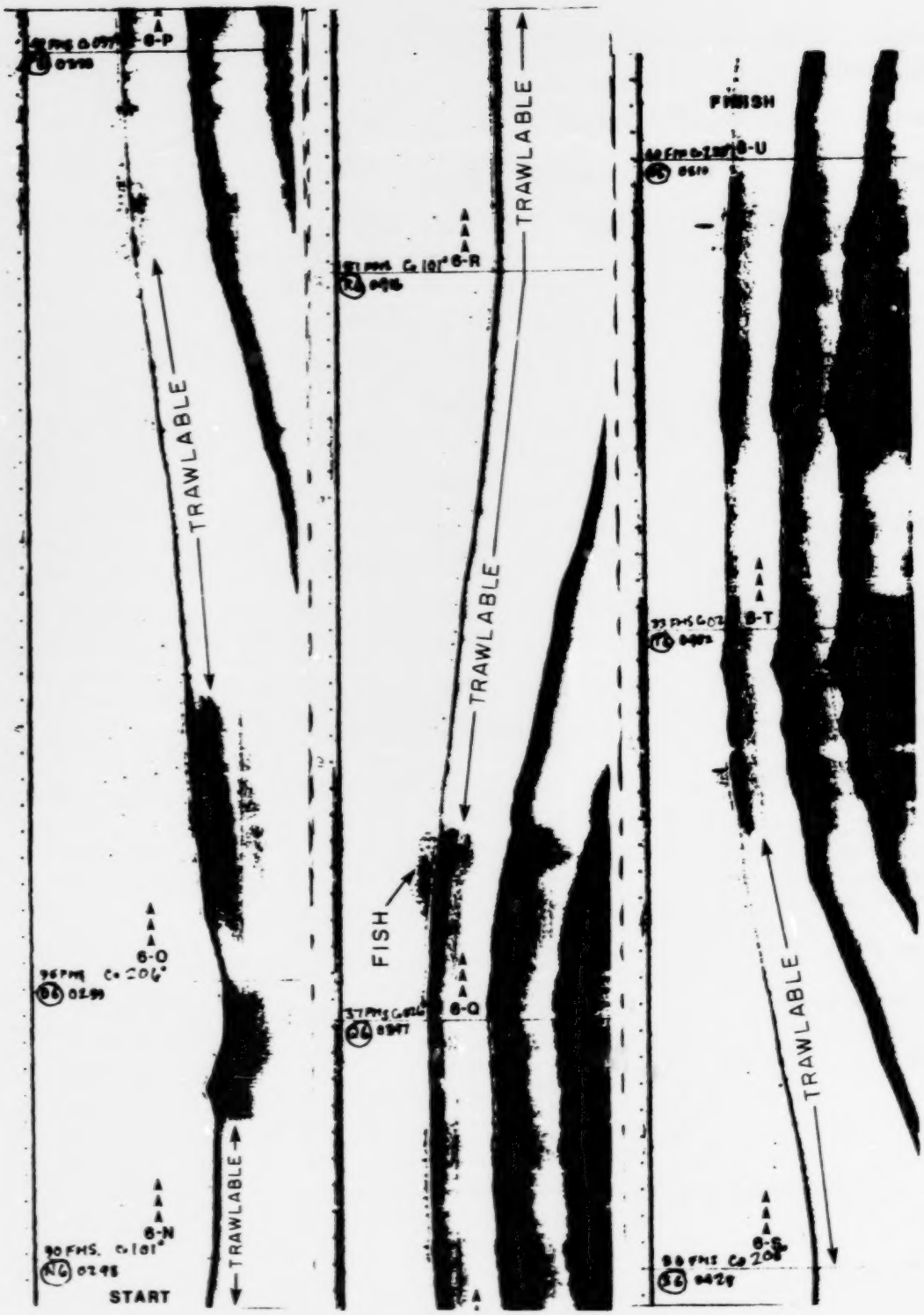

Fig. 6. Selected echograms from echo sounder trackline no. 6 (Cook Bank) showing "trawlable" bottom, G.B. REED groundfish cruise 82-2, July 12-29, 1982.

Appendix Table 1. Fishing log for G.B. REED groundfish Cruise No. 82-2 (Queen Charlotte Sound). July 12-29, 1982.

HAUL NUMBER		1	2	3	4	5
DATE		14	14	17	17	18
AREA		GIG	GIG	SWC	SWC	NWC
Time start (PST)		0840	1020	1247	1441	1218
Duration (min)		30	30	40	30	31
Start N. Lat.	°	51	51	51	51	51
	'	23.9	23.1	50.7	50.0	55.7
W. Long.	°	128	128	129	129	128
	'	33.4	33.7	08.7	05.1	48.6
Direction (°T)		280	280	214	209	138
Finish N. Lat.	°	51	51	51	51	51
	'	24.2	23.4	49.2	48.5	54.2
W. Long.	°	128	128	129	129	128
	'	35.4	36.1	10.3	06.7	46.7
Distance travelled		1.3	1.6	1.6	1.5	-
Depth (fm)		110	108-114	67-65	62-61	70-74
Depth interval (fm)		110	0	60	60	70
Water temp. (°C)						
Surface		-	-	-	-	-
Bottom		-	-	-	-	-
Depth (fm)		-	-	-	-	-
Type of gear		1	1	1	1	1
Total catch (kg)		682	629	323	223	1,192
Remarks		-	-	-	-	-

Appendix Table 1 (cont'd)

HAUL NUMBER	1	2	3	4	5
DATE	14	14	17	17	18
AREA	GIG	GIG	SWC	SWC	SWC
TOTAL CATCH (kg)	682	629	323	223	1,192
Rockfish					
S. alutus	171	278	-	-	-
S. brevispinis	-	3	20	20	12
S. entomelas	-	-	-	-	-
S. flavidus	-	-	-	-	-
S. pinniger	-	-	-	-	-
S. proriger	-	-	-	-	-
Other	31	28	-	6	4
Flatfish					
Arrowtooth flounder	191	136	220	43	913
Dover sole	238	133	-	-	T
English sole	-	-	13	8	8
Halibut (nos.)'	-	-	17(3)	41(6)	46(5)
Pacific sanddab	-	-	11	30	12
Petrale sole	-	-	1	2	29
Rex sole	1	-	5	1	6
Rock sole	-	-	T	-	-
Other	1	-	-	-	18
Other roundfish					
Lingcod	-	-	-	12	79
Pacific cod	-	1	4	3	18
Sablefish	25	29	-	-	2
Other	-	1	-	T	-
Selachii					
Dogfish	7	3	9	8	29
Ratfish	17	13	23	30	8
Skate	-	T	-	19	8
Invertebrates					
Anemone	-	-	-	-	-
Other	-	1	T	-	-

Appendix Table 1 (cont'd)

HAUL NUMBER		6	7	8	9	10
DATE		18	19	21	21	21
AREA		NWC	NEC	TI	TI	TI
Time start (PST)		1418	1501	1929	1254	1459
Duration (min)		20	35	30	30	03
Start N. Lat.	°	51	51	50	50	50
	'	54.6	31.5	58.1	57.1	58.0
W. Long.	°	128	128	128	129	129
	'	39.1	39.3	57.5	10.6	07.2
Direction (°T)		114	226	272	268	210
Finish N. Lat.	°	51	51	50	50	50
	'	54.3	30.4	57.8	57.1	57.9
W. Long.	°	128	128	128	129	129
	'	37.1	41.9	59.1	12.4	07.2
Distance travelled		1.2	2.0	1.1	1.2	0.1
Depth (fm)		82-76	61-58	40-38	69-74	62
Depth interval (fm)		70	50	30	70	60
Water temp. (°C)						
Surface		-	-	13.3	13.7	-
Bottom		-	-	7.7	6.6	-
Depth (fm)		-	-	41	71	-
Type of gear		1	1	1	1	1
Total catch (kg)		277	3,097	26	566	38
Remarks		-	-	Head line parted (no snag) NG	-	Short tow (rough bottom) NG

Appendix Table 1 (cont'd)

HAUL NUMBER	6	7	8	9	10
DATE	18	19	21	21	21
AREA	NWC	NEC	TI	TI	TI
TOTAL CATCH (kg)	277	3,097	26	566	38
Rockfish					
S. alutus	T	-	-	-	-
S. brevispinis	17	4	-	-	-
S. entomelas	-	-	-	117	-
S. flavidus	30	-	-	-	-
S. pinniger	2	3	-	-	-
S. proriger	125	-	-	-	-
Other	15	20	-	1	T
Flatfish					
Arrowtooth flounder	51	836	-	129	10
Dover sole	1	25	-	21	1
English sole	-	140	-	42	9
Halibut (nos.)'	-	37(12)	9(4)	-	11(1)
Pacific sanddab	-	12	T	-	1
Petrale sole	-	38	1	T	-
Rex sole	T	401	-	151	5
Rock sole	-	1	9	-	1
Other	2	-	4	T	-
Other roundfish					
Lingcod	-	27	-	-	-
Pacific cod	1	21	-	72	-
Sablefish	T	1,437	-	33	-
Other	T	T	2	T	-
Selachii					
Dogfish	26	47	-	-	-
Ratfish	7	12	1	T	T
Skate	-	36	-	-	-
Invertebrates					
Anemone	-	-	-	-	-
Other	-	-	-	-	-

Appendix Table 1 (cont'd)

HAUL NUMBER	11	12	13	14	15
DATE	22	22	22	23	23
AREA	MEX	MEX	MEX	CSS	CSS
Time start (PST)	0835	1015	1221	0832	1035
Duration (min)	30	30	30	30	4
Start N. Lat. °	50	51	51	51	51
'	59.8	00.5	00.7	06.8	03.6
W. Long. °	128	128	128	128	128
'	13.4	13.2	09.8	31.1	30.6
Direction (°T)	285	280	289	207	300
Finish N. Lat. °	51	51	51	51	51
'	00.5	01.1	01.1	05.4	03.7
W. Long. °	128	128	128	128	128
'	15.6	15.1	12.0	32.3	30.8
Distance travelled	1.7	1.4	1.3	1.6	0.2
Depth (fm)	50-51	60-63	72-71	79-68	61
Depth interval (fm)	50	60	70	70	60
Water temp. (°C)					
Surface	12.9	13.1	13.3	13.6	-
Bottom	7.4	6.6	6.3	6.4	-
Depth (fm)	50	68	68	70	-
Type of gear	1	1	1	1	1
Total catch (kg)	675	1,352	642	1,155	32
Remarks	-	-	-	-	rough bottom NG

Appendix Table 1 (cont'd)

HAUL NUMBER	11	12	13	14	15
DATE	22	22	22	23	23
AREA	MEX	MEX	MEX	CSS	CSS
TOTAL CATCH (kg)	675	1,352	642	1,155	32
Rockfish					
S. alutus	-	-	-	T	-
S. brevispinis	-	-	63	315	-
S. entomelas	-	-	-	-	-
S. flavidus	T	-	-	-	-
S. pinniger	-	-	52	315	-
S. proriger	-	-	27	1	-
Other	18	13	9	17	-
Flatfish					
Arrowtooth flounder	399	1,092	169	332	11
Dover sole	1	T	26	1	4
English sole	46	44	47	29	3
Halibut (nos.)*	14(3)	3(1)	3(1)	-	-
Pacific sanddab	-	-	-	1	3
Petrale sole	15	1	-	T	1
Rex sole	9	25	25	20	3
Rock sole	15	-	-	-	-
Other	-	-	T	7	-
Other roundfish					
Lingcod	42	11	-	24	-
Pacific cod	24	109	10	26	2
Sablefish	-	-	101	19	-
Other	-	-	2	-	-
Selachii					
Dogfish	19	7	84	14	-
Ratfish	33	42	21	32	5
Skate	-	5	3	-	-
Invertebrates					
Anemone	40	-	-	-	-
Other	T	T	T	2	-

Appendix Table 1 (cont'd)

HAUL NUMBER		16	17	18	19	20
DATE		23	23	24	26	26
AREA		CSS	CSS	CSS	SEC	SEC
Time start (PST)		1224	1418	0906	0850	1033
Duration (min)		31	29	30	30	30
Start N. Lat.	°	51	51	51	51	51
	'	04.7	03.1	08.2	26.2	26.4
W. Long.	°	128	128	128	129	129
	'	34.3	35.1	50.2	23.3	22.5
Direction (°T)		301	307	270	280	280
Finish N. Lat.	°	51	51	51	51	51
	'	05.2	03.6	08.0	26.4	26.5
W. Long,	°	128	128	128	129	129
	'	35.8	36.2	52.9	25.8	24.9
Distance travelled		1.1	0.9	1.8	1.5	1.6
Depth (fm)		61-60	51-50	50-55	64-69	60-66
Depth interval (fm)		60	50	50	60	60
Water temp. (°C)						
Surface		13.9	13.7	13.7	-	-
Bottom		6.7	7.2	6.9	-	-
Depth (fm)		66	51	60	-	-
Type of gear		1	1	1	1	1
Total catch (kg)		500	79	129	254	202
Remarks		-	-	-	-	-

Appendix Table 1 (cont'd)

HAUL NUMBER	16	17	18	19	20
DATE	23	23	24	26	26
AREA	CSS	CSS	CSS	SEC	SEC
TOTAL CATCH (kg)	500	79	129	254	202
Rockfish					
S. alutus	-	-	-	-	-
S. brevispinis	-	-	-	-	-
S. entomelas	-	-	-	-	-
S. flavidus	-	-	-	-	-
S. pinniger	-	-	-	-	-
S. proriger	-	-	-	-	-
Other	-	-	-	-	-
Flatfish					
Arrowtooth flounder	258	2	-	14	3
Dover sole	-	-	-	3	-
English sole	167	6	42	32	52
Halibut (nos.)'	10(3)	37(9)	45(11)	38(10)	30(8)
Pacific sanddab	5	4	2	12	43
Petrale sole	8	T	-	20	11
Rex sole	18	T	1	8	3
Rock sole	-	1	-	23	27
Other	-	-	1	-	T
Other roundfish					
Lingcod	8	-	-	9	3
Pacific cod	3	-	-	64	-
Sablefish	-	-	-	1	-
Other	-	T	T	-	-
Selachii					
Dogfish	-	2	2	-	-
Ratfish	16	8	36	20	16
Skate	3	19	-	10	14
Invertebrates					
Anemone	2	-	-	-	-
Other	2	T	-	-	T

Appendix Table 1 (cont'd)

HAUL NUMBER	21	22	23	24	25	26
DATE	26	26	26	27	27	27
AREA	SEC	SEC	SEC	CSS	CSS	CSS
Time start (PST)	1244	1424	1554	0847	1032	1209
Duration (min)	30	30	30	30	04	29
Start N. Lat. °	51	51	51	51	51	51
'	26.5	26.9	26.0	02.7	03.8	03.7
W. Long. °	129	129	129	128	128	128
'	19.3	22.2	23.2	38.8	36.4	37.1
Direction (°T)	281	286	277	330	340	349
Finish N. Lat. °	51	51	51	51	51	51
'	26.9	27.4	26.0	04.1	03.9	06.0
W. Long. °	129	129	129	128	128	128
'	21.9	24.4	25.4	39.5	36.4	36.8
Distance travelled	1.8	1.4	1.5	1.5	0.1	1.5
Depth (fm)	51-55	57-60	66-70	40	49	45-51
Depth interval (fm)	50	50	60	40	40	40
Water temp. (°C)						
Surface	-	-	-	12.8	14.1	-
Bottom	-	-	-	7.2	6.8	-
Depth (fm)	-	-	-	41	55	-
Type of gear	1	1	1	1	1	1
Total catch (kg)	150	249	206	169	0	121
Remarks	-	-	-		Crossed doors NG	-

Appendix Table 1 (cont'd)

HAUL NUMBER	21	22	23	24	25	26
DATE	26	26	26	27	27	27
AREA	SEC	SEC	SEC	CSS	CSS	CSS
TOTAL CATCH (kg)	150	249	206	169	0	121
Rockfish						
S. alutus	-	-	-	-	-	-
S. brevispinis	-	-	-	-	-	-
S. entomelas	-	-	-	-	-	-
S. flavidus	-	-	-	-	-	-
S. pinniger	-	-	-	-	-	-
S. proriger	-	-	-	-	-	-
Other	-	-	-	-	-	-
Flatfish						
Arrowtooth flounder	-	-	8	-	-	T
Dover sole	-	-	4	-	-	-
English sole	-	2	39	T	-	-
Halibut (nos.)'	30(8)	13(6)	58(19)	46(15)	-	47(16)
Pacific sanddab	1	4	16	-	-	-
Petrale sole	-	-	40	4	-	-
Rex sole	-	-	3	-	-	-
Rock sole	109	201	22	77	-	32
Other	T	-	-	1	-	T
Other roundfish						
Lingcod	3	11	5	2	-	4
Pacific cod	-	-	8	-	-	-
Sablefish	-	-	-	-	-	-
Other	-	-	-	3	-	5
Selachii						
Dogfish	-	-	-	1	-	7
Ratfish	T	14	1	15	-	9
Skate	7	4	2	20	-	17
Invertebrates						
Anemone	-	-	-	-	-	-
Other	-	-	-	-	-	T

Footnotes to Appendix Table 1

Area: CSS = Cape Scott Spit, Cook Bank (CB); GIG = Goose Island Gully; MEX = Mexicana Ground (CB);
NEC = Northeast Corner, Goose Island Bank (GIB); NWC = Northwest Corner (GIB); SEC = Southeast Corner, (GIB); SWC = Southwest Corner (GIB); TI = Triangle Island Ground (CB).

Time start: Pacific Daylight Time.

Distance travelled: Nautical miles.

Depth interval (fm): Midpoint of 10-fm depth range in which the major portion of trawling occurred (e.g. 02 = 20-29; 03 = 30-39; etc.).

Type of gear: 1 = standard on-bottom trawl equipped with 7-inch rubber-disk groundline; 78-ft headrope; 109-ft footrope; 3-in mesh; 1.5-in liner in cod-end; 20-fm sweeplines; 1,400-lb Brompton doors.

Flatfish: Arrowtooth flounder (Atheresthes stomias); Dover sole (Microstomus pacificus); English sole (Parophrys vetulus); halibut (Hippoglossus stenolepis); Pacific sanddab (Citharichthys sordidus); petrale sole (Eopsetta jordani); rex sole (Glyptocephalus zachirus); rock sole (Lepidopsetta bilineata).

Roundfish: Lingcod (Ophiodon elongatus); Pacific cod (Gadus macrocephalus); sablefish (Anoplopoma fimbria).
Selachii: dogfish (Squalus acanthias); ratfish (Hydrolagus colliei); skate (Rajidae).

Other (any group): All species whose catch never exceeded 25 kg in any single haul and includes the following:

Flatfish: Butter sole (Isopsetta isolepis); curlfin sole (Pleuronichthys decurrens); flathead sole (Hippoglossoides elassodon); slender sole (Lyopsetta exilis).

Rockfish: Sebastes babcocki; S. elongatus; S. maliger; S. paucispinis; S. ruberrimus; S. wilsoni; S. zacentrus; Sebastolobus alascanus.

Roundfish: Eulachon (Thaleichthys pacificus); walleye pollock (Theragra chalcogramma); sculpin (Cottidae); tomcod (Microgadus proximus); wolf-eel (Anarrhichthys ocellatus).

Invertebrates: Anemone; crab (box); cucumber; shrimp (pink, sidestripe); squid (Loligo rossia); starfish (basket, brittle); urchin.

T = Trace = less than 1 kg.

Appendix Table 2. Size composition (nos. sampled) of arrowtooth flounder (turbot), by haul, by sex, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Fork Length (cm)	Haul Number																													
	3		5		7		9			11		12		13		14		15												
	M	F	M	F	M	F	M	F	U	M	F	M	F	M	F	M	F	M	F											
13	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-											
4	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-											
5	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-	-	-											
6	-	-	-	-	-	-	-	-	42	-	-	-	-	-	-	-	-	-	-											
7	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-											
8	-	-	-	-	-	-	-	-	29	-	-	-	-	-	-	-	-	-	-											
9	-	-	-	-	-	-	-	1	9	-	-	-	-	-	-	-	-	-	-											
20	-	1	-	-	-	-	-	0	4	-	-	-	-	-	-	-	-	1	-											
1	-	0	-	-	-	-	-	0	0	-	-	-	-	-	-	-	-	0	-											
2	-	0	-	1	-	-	1	2	4	-	-	-	-	-	-	-	1	0	-											
3	-	0	-	0	-	-	3	4	-	-	-	-	-	-	1	1	0	0	-											
4	-	0	-	0	-	-	4	4	-	-	-	-	-	2	5	0	2	0	-											
5	-	0	2	1	1	-	2	2	-	-	-	-	-	1	3	0	2	0	-											
6	-	0	3	1	0	-	2	6	-	-	-	-	-	1	4	1	3	1	-											
7	-	0	3	0	0	-	2	4	-	-	-	-	-	3	2	1	4	1	-											
8	-	0	2	5	0	-	0	1	-	-	-	-	-	0	2	0	1	0	-											
9	-	1	3	1	0	-	2	3	-	1	-	-	-	0	1	0	1	0	-											
30	-	0	1	3	0	-	4	4	-	0	-	-	-	2	0	2	3	0	-											
1	-	0	6	2	0	-	3	0	-	0	-	-	1	1	2	3	6	0	-											
2	-	0	8	8	1	-	3	2	-	0	-	2	0	4	2	4	3	2	-											
3	-	0	12	2	0	-	8	2	-	0	-	1	0	2	1	6	2	1	-											
4	1	0	13	1	0	-	12	3	-	0	1	2	2	4	2	7	4	1	2											
5	1	0	8	0	1	1	12	4	-	0	0	0	3	5	3	11	3	6	2											
6	0	0	5	2	0	0	7	4	-	1	0	2	2	5	1	13	8	10	1											
7	3	0	7	2	1	0	11	4	-	1	0	1	2	9	3	16	5	9	2											
8	1	0	9	4	1	0	16	5	-	4	2	3	1	6	6	19	6	10	1											
9	3	0	8	0	1	0	9	3	-	1	2	3	2	10	1	11	3	9	0											
40	1	0	12	4	0	1	8	4	-	5	3	1	1	7	8	9	3	6	4											
1	5	2	4	4	1	0	6	6	-	5	3	3	3	6	4	13	4	4	2											
2	0	3	7	2	0	0	4	3	-	1	2	3	3	4	6	4	6	3	1											
3	1	2	4	6	2	2	2	5	-	3	5	2	5	5	6	12	9	5	5											
4	0	4	1	3	1	3	3	7	-	4	11	2	6	4	13	9	11	6	6											
5	3	10	8	10	2	5	3	7	-	5	10	3	4	2	4	3	10	2	10											
6	1	10	1	9	4	5	3	4	-	3	15	3	8	2	7	4	8	5	14											
7	0	9	0	13	4	11	2	6	-	5	18	3	14	2	10	1	9	2	8											
8	0	15	2	16	5	12	1	7	-	2	14	2	10	0	9	3	3	2	14											
9	1	12	0	6	2	13	-	3	-	4	11	5	12	0	7	0	9	2	6											
50	1	15	0	8	0	9	-	3	-	0	14	1	5	0	1	1	4	0	9											
1	-	7	1	9	2	18	-	3	-	0	14	1	11	0	7	-	3	1	4											
2	-	13	-	10	-	21	-	1	-	1	14	-	11	0	5	-	4	2	7											
3	-	14	-	18	-	16	-	2	-	-	9	-	12	0	3	-	3	-	10											
4	-	11	-	11	-	9	-	1	-	-	9	-	7	0	4	-	4	-	10											
5	-	12	-	7	-	11	-	-	-	-	8	-	8	0	2	-	7	-	11											
6	-	10	-	6	-	10				-	3	-	4																	

Appendix Table 2. (cont'd)

Fork Length (cm)	Haul Number																			
	3		5		7		9			11		12		13		14		15		
	M	F	M	F	M	F	M	F	U	M	F	M	F	M	F	M	F	M	F	
57	-	3	-	11	-	8	-	-	-	-	10	-	10	0	1	-	7	-	5	
8	-	4	-	6	-	10	-	-	-	-	7	-	6	0	2	-	6	-	3	
9	-	2	-	7	-	2	-	-	-	-	4	-	6	0	3	-	3	-	3	
60	-	1	-	5	-	3	-	-	-	-	3	-	6	0	1	-	3	-	2	
1	-	4	-	2	-	3	-	-	-	-	8	-	7	0	0	-	5	-	4	
2	-	1	-	1	-	2	-	-	-	-	2	-	5	0	1	-	1	-	3	
3	-	1	-	4	-	0	-	-	-	-	-	-	3	1	1	-	1	-	2	
4	-	1	-	-	-	0	-	-	-	-	-	-	2	-	-	-	2	-	4	
5	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	1	-	0	
6	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	0	-	0	
7	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	0	-	0	
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	0	
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	0	
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Total	22	168	130	211	29	177	133	123	162	46	202	40	180	88	144	154	185	90	156	

Appendix Table 3. Size composition (nos. sampled) of rock sole, by haul, by sex, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Fork length (cm)	Haul number 8	11	18		19		20		21		22		23		24		26	
	U[a]	U[a]	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
12	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
9	7	-	-	-	-	-	-	-	3	-	1	1	1	-	1	-	-	-
20	3	-	-	-	-	-	-	-	0	1	2	0	0	-	0	1	1	-
1	12	-	-	-	-	-	-	-	1	0	2	1	0	-	2	2	0	-
2	8	-	-	-	-	-	-	-	2	0	2	2	0	-	2	1	0	-
3	13	-	-	-	-	-	-	1	0	2	1	1	0	-	2	2	0	-
4	9	-	1	-	-	-	-	0	2	2	2	3	0	-	5	5	0	-
5	4	2	1	1	-	-	-	1	5	3	2	4	0	1	1	1	0	-
6	7	0	1	0	-	1	-	0	3	3	1	4	0	0	4	3	0	-
7	2	1	2	0	-	1	-	2	6	5	3	5	0	0	4	8	0	1
8	2	1	1	0	1	2	-	2	2	2	5	8	0	0	2	5	0	0
9	3	1	2	0	0	0	-	1	3	7	0	3	0	0	4	2	0	1
30	0	2	3	2	0	2	-	1	1	4	1	3	0	0	3	5	1	0
1	1	2	1	0	0	1	-	3	1	5	0	8	0	0	3	5	0	0
2	0	4	2	1	0	4	-	2	3	4	1	3	1	1	1	4	0	2
3	0	2	1	2	0	1	1	2	2	9	1	7	0	2	3	3	0	0
4	0	3	-	2	0	1	-	2	4	8	2	7	0	2	0	2	1	2
5	1	2	-	3	0	3	-	0	0	9	1	8	1	1	1	1	1	0
6	-	3	-	3	0	2	-	1	1	9	1	5	-	0	3	4	0	1
7	-	3	-	1	0	3	-	2	0	3	0	11	-	3	1	2	1	5
8	-	2	-	4	1	3	-	0	1	16	1	6	-	1	2	5	-	3
9	-	0	-	2	-	2	-	1	0	4	1	8	-	2	0	1	-	1
40	-	2	-	2	-	3	-	1	0	2	1	7	-	0	0	2	-	3
1	-	0	-	1	-	0	-	1	1	2	0	4	-	1	-	5	-	1
2	-	1	-	4	-	0	-	3	0	6	0	13	-	2	0	7	-	4
3	-	-	-	4	-	2	-	0	1	3	0	12	-	2	1	2	-	3
4	-	-	-	4	-	0	-	2	0	2	0	9	-	2	-	3	-	1
5	-	-	-	2	-	0	-	2	0	2	0	18	-	1	-	5	-	2
6	-	-	-	1	-	0	-	2	1	0	1	12	-	0	-	4	-	1
7	-	-	-	0	-	2	-	0	-	1	-	5	-	0	-	0	-	0
8	-	-	-	1	-	0	-	0	-	2	-	5	-	0	-	2	-	0
9	-	-	-	-	-	1	-	2	-	4	-	6	-	0	-	1	-	1
50	-	-	-	-	-	-	-	1	-	1	-	4	-	0	-	1	-	-
1	-	-	-	-	-	-	-	-	-	1	-	3	-	0	-	0	-	-
2	-	-	-	-	-	-	-	-	-	4	-	5	-	0	-	0	-	-
3	-	-	-	-	-	-	-	-	-	2	-	1	-	0	-	0	-	-
4	-	-	-	-	-	-	-	-	-	0	-	0	-	0	-	1	-	-
5	-	-	-	-	-	-	-	-	-	0	-	2	-	1	-	-	-	-
6	-	-	-	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	1	-	0	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Total	15	40	80	31	2	34	1	35	43	129	33	205	3	22	45	95	5	32

[a]Not sexed.

Appendix Table 4. Size composition (nos. sampled) of Pacific cod, by haul, by sex, G.B. REED Groundfish Cruise No.82-2, July 12-29, 1982.

Fork length (cm)	Haul number 9		11		12		13		14		15		19	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
25	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	0	-	-	-	-	-	-	-	-	-	-	-	-	-
7	1	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1	1	1	-	-	-	-	-	-	-	-	-	-	-
9	0	0	0	-	-	-	-	-	-	-	-	-	-	-
30	2	1	0	-	1	-	-	-	-	-	-	-	-	-
1	1	0	0	1	0	-	-	-	-	-	-	-	-	-
2	0	1	0	1	1	-	-	-	-	-	1	-	-	-
3	0	0	1	0	0	-	-	-	-	-	-	-	-	-
4	0	0	0	0	0	-	-	1	-	-	-	1	-	-
5	0	0	0	1	0	-	1	0	-	-	-	0	-	-
6	0	1	0	0	1	-	0	0	-	-	-	0	-	-
7	1	1	0	0	0	-	0	0	-	-	-	0	-	1
8	0	1	1	0	1	-	0	0	-	-	-	0	-	1
9	0	2	1	0	0	1	0	0	-	-	-	0	-	0
40	0	2	0	0	1	1	0	0	-	-	-	0	-	0
1	2	1	0	0	1	0	0	0	-	-	-	0	1	0
2	3	2	2	1	0	1	0	0	-	-	-	0	0	0
3	2	2	0	0	2	2	0	1	1	-	-	0	0	0
4	4	1	2	2	3	0	1	0	0	-	-	0	1	0
5	0	3	0	1	1	6	1	0	1	-	-	1	0	0
6	2	1	1	2	3	6	0	0	0	-	-	0	0	1
7	0	2	1	1	4	2	0	0	0	-	-	1	0	1
8	1	0	1	-	3	4	0	0	0	-	-	-	1	0
9	1	0	1	-	4	6	0	0	1	-	-	-	1	1
50	1	2	0	-	2	2	0	0	0	1	-	-	2	0
1	0	1	0	-	3	0	0	0	0	0	-	-	0	0
2	3	1	1	-	2	1	0	0	1	1	-	-	3	0
3	2	1	2	-	1	2	0	0	1	0	-	-	1	1
4	0	1	0	-	1	2	0	0	1	0	-	-	0	0
5	1	0	0	-	1	2	0	0	0	1	-	-	2	0
6	2	1	1	-	3	2	0	0	0	0	-	-	0	2
7	0	1	-	-	2	0	2	0	0	1	-	-	0	0
8	2	1	-	-	1	0	-	0	1	0	-	-	0	0
9	0	1	-	-	0	0	-	0	0	0	-	-	2	0
60	0	0	-	-	0	0	-	0	0	0	-	-	0	1
1	0	0	-	-	0	0	-	1	1	1	-	-	0	0
2	0	0	-	-	0	0	-	-	-	0	-	-	1	0
3	0	0	-	-	1	1	-	-	-	0	-	-	1	1
4	1	1	-	-	-	-	-	-	-	0	-	-	-	1
5	-	-	-	-	-	-	-	-	-	0	-	-	-	0
6	-	-	-	-	-	-	-	-	-	1	-	-	-	1
7	-	-	-	-	-	-	-	-	-	-	-	-	-	0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9	-	-	-	-	-	-	-	-	-	-	-	-	-	1
70	-	-	-	-	-	-	-	-	-	-	-	-	-	0
1	-	-	-	-	-	-	-	-	-	-	-	-	-	0
2	-	-	-	-	-	-	-	-	-	-	-	-	-	0
73	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Total	34	33	16	10	43	41	5	3	8	6	1	3	16	14

Appendix Table 5. Size composition (nos. sampled) of petrale sole, by haul, by sex, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Fork Length (cm)	Haul Number 5		7		19		20		23		26	
	M	F	M	F	M	F	M	F	M	F	M	F
26	-	-	-	-	-	-	-	-	1	-	-	-
7	1	-	-	-	-	-	-	-	1	-	-	-
8	0	-	1	1	-	1	-	-	1	1	-	-
9	1	-	0	0	-	0	-	-	0	1	-	-
30	2	1	2	1	-	0	-	-	3	2	-	-
1	1	0	3	0	-	0	-	1	3	2	-	-
2	4	2	5	1	-	0	-	1	1	1	-	-
3	2	1	6	3	-	2	-	0	2	1	-	-
4	5	5	6	7	-	2	-	0	4	2	-	-
5	6	2	6	3	-	2	2	0	1	0	-	-
6	1	3	5	3	-	4	-	1	3	2	-	-
7	0	0	2	3	-	1	-	0	4	2	-	-
8	0	1	0	2	-	0	-	1	2	4	-	-
9	1	0	1	3	-	0	-	1	2	1	-	-
40	0	0	0	1	-	1	-	0	0	2	-	1
1	1	1	0	2	1	0	-	2	0	0	-	0
2	1	0	0	0	1	0	-	0	3	1	-	0
3	1	0	0	1	0	0	-	0	0	0	-	0
4	3	1	0	0	0	0	-	0	2	0	-	1
5	0	0	0	0	0	1	-	1	0	1	-	0
6	1	0	1	1	1	1	-	0	3	1	-	0
7	1	0	-	-	0	1	-	0	1	1	-	0
8	-	1	-	-	1	1	-	0	-	1	1	0
9	-	0	-	-	2	-	-	0	-	1	-	0
50	-	1	-	-	-	-	-	1	-	0	-	0
1	-	-	-	-	-	-	-	1	-	0	-	0
2	-	-	-	-	-	-	-	0	-	0	-	1
3	-	-	-	-	-	-	-	0	-	1	-	0
4	-	-	-	-	-	-	-	0	-	-	-	0
5	-	-	-	-	-	-	-	1	-	-	-	0
6	-	-	-	-	-	-	-	-	-	-	-	0
7	-	-	-	-	-	-	-	-	-	-	-	0
8	-	-	-	-	-	-	-	-	-	-	-	0
59	-	-	-	-	-	-	-	-	-	-	-	1
Total	32	19	38	32	6	17	2	11	37	28	1	4

Appendix Table 6. Size composition (nos. sampled) of curlfin sole, Pacific ocean perch, Pacific sanddab, sablefish, and sandlance, by haul, by sex, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1980. (Sandlance sample collected from Pacific cod stomachs.)

Fork length	Curlfin sole	Pacific ocean perch				Pacific sanddab	Sable-fish	Sandlance	
		Haul number							
(cm)	8	1		2		8	7	11	12
	U	M	F	M	F	U	U	U	U
6	-	-	-	-	-	-	-	1	-
7	-	-	-	-	-	-	-	0	-
8	-	-	-	-	-	-	-	2	1
9	-	-	-	-	-	-	-	0	1
10	-	-	-	-	-	-	-	0	0
11	-	-	-	-	-	-	-	0	0
12	-	-	-	-	-	-	-	1	1
13	-	-	-	-	-	-	-	3	1
14	-	-	-	1	-	3	-	4	2
15	-	-	-	0	2	2	-	1	7
16	-	-	-	0	0	0	-	2	4
17	-	-	-	0	0	0	-	1	1
18	-	-	-	0	0	1	-	-	2
19	-	-	-	0	1	1	-	-	1
20	-	-	1	1	0	0	-	-	1
21	-	1	0	1	0	0	-	-	-
22	-	0	0	3	2	0	-	-	-
23	-	2	6	8	11	2	-	-	-
24	-	2	3	10	14	1	-	-	-
25	-	7	10	20	21	-	-	-	-
26	-	22	16	26	46	-	-	-	-
27	2	17	27	27	46	-	-	-	-
28	3	10	8	21	33	-	-	-	-
29	2	2	4	14	24	-	-	-	-
30	1	0	1	3	3	-	-	-	-
31	1	3	1	1	1	-	-	-	-
32	1	0	2	3	1	-	-	-	-
33	3	2	0	3	4	-	3	-	-
34	-	0	3	1	1	-	14	-	-
35	-	3	2	5	2	-	11	-	-
36	-	5	0	5	2	-	16	-	-
37	-	7	2	6	1	-	15	-	-
38	-	16	1	18	2	-	19	-	-
39	-	11	3	25	1	-	16	-	-
40	-	26	4	31	3	-	18	-	-
41	-	15	4	23	2	-	34	-	-
42	-	9	1	19	6	-	31	-	-
43	-	7	2	14	8	-	24	-	-
44	-	2	1	7	7	-	10	-	-
45	-	-	2	1	9	-	3	-	-
46	-	-	4	2	6	-	1	-	-
47	-	-	2	-	1	-	2	-	-
48	-	-	-	-	0	-	2	-	-
49	-	-	-	-	5	-	-	-	-
Total	13	169	110	299	260	10	219	15	22

Appendix Table 7. Size composition (nos. sampled) of lingcod, by haul, G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Fork Length (cm)	Haul No. 5	Haul No. 11	Fork Length (cm)	Haul No. 5	Haul No. 11
55	-	1	86	0	-
56	1	0	87	0	-
57	0	0	88	0	-
58	2	1	89	0	-
59	3	0	90	0	-
60	1	1	91	0	-
61	1	3	92	0	-
62	2	1	93	0	-
63	0	1	94	0	-
64	0	2	95	0	-
65	2	1	96	0	-
66	1	0	97	1	-
67	1	3	98	0	-
68	1	0	99	0	-
69	4	1	100	0	-
70	1	1	101	0	-
71	2	0	102	0	-
72	0	1	103	0	-
73	0	-	104	0	-
74	0	-	105	0	-
75	0	-	106	0	-
76	0	-	107	0	-
77	0	-	108	0	-
78	0	-	109	0	-
79	0	-	110	0	-
80	0	-	111	0	-
81	0	-	112	0	-
82	0	-	113	0	-
83	0	-	114	0	-
84	0	-	115	0	-
85	0	-	116	0	-
	0	-	117	1	-
	0	-			
			Total	24	17

Appendix Table 8. Fork lengths (cm) by haul, of individual halibut caught during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

	Haul Number																		
	3	4	5	7	8	10	11	12	13	16	17	18	19	20	21	22	23	24	26
	64	65	66	53	52	97	72	61	64	51	60	53	56	62	59	49	53	53	50
	69	69	76	54	56	-	73	-	-	68	64	55	64	65	62	53	54	55	56
	94	90	95	55	60	-	74	-	-	77	68	58	65	67	63	57	57	58	57
	-	92	99	57	64	-	-	-	-	-	71	59	66	68	65	61	58	59	58
	-	99	104	58	-	-	-	-	-	-	79	65	67	71	68	63	59	60	59
	-	-	-	60	-	-	-	-	-	-	84	66	69	75	70	-	61	61	60
	-	-	-	62	-	-	-	-	-	-	-	68	70	-	71	-	62	63	61
	-	-	-	64	-	-	-	-	-	-	-	69	90	-	82	-	63	65	63
	-	-	-	65	-	-	-	-	-	-	-	86	-	-	-	-	64	68	64
	-	-	-	68	-	-	-	-	-	-	-	103	-	-	-	-	65	70	68
	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-	66	71	69
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	73	71
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	74	86
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	-	-
Total	3	6	5	12	4	1	3	1	1	3	9	11	10	8	8	6	19	15	16

Appendix Table 9. Locations of hydrographic and geological stations, occupied during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Station No.	Haul No.	Shipek Sample No.	Time/date	Position Lat.	Position Long.	Observation[a] XBT	BT	NAN	BOTT
1	-	-	2220/13	51° 07.0'	128° 20.0'	+	-	-	-
5	-	-	0100/14	51° 24.0'	128° 42.5'	+	-	-	-
13	-	-	1350/15	52° 00.0'	129° 30.0'	+	-	-	-
17	-	-	1815/15	52° 20.0'	130° 12.8'	+	-	-	-
18	-	-	1910/15	52° 29.0'	130° 08.9'	+	-	-	-
19	-	-	2010/15	52° 38.4'	130° 08.5'	+	-	-	-
20	-	-	2110/15	52° 49.0'	130° 10.8'	+	-	-	-
21	-	-	2345/15	52° 59.7'	130° 12.5'	+	-	+	-
23	-	-	0240/16	53° 15.5'	130° 41.0'	+	-	-	-
24	-	-	0415/16	53° 28.5'	130° 47.0'	+	-	-	-
25	-	-	0545/16	53° 42.5'	130° 45.0'	+	-	-	-
26	-	-	0650/16	53° 49.9'	130° 54.9'	+	-	-	-
27	-	-	0740/16	53° 58.7'	131° 02.9'	+	-	-	-
28A	-	-	0840/16	54° 08.5'	131° 03.3'	+	-	-	-
30	-	-	0945/16	54° 19.7'	131° 05.5'	+	-	-	-
30A	-	-	1015/16	54° 22.5'	131° 15.0'	+	-	-	-
33	-	-	1120/16	54° 24.5'	131° 23.0'	+	+	+	-
34	-	-	1150/16	54° 21.5'	131° 24.0'	+	-	-	-
35	-	-	1205/16	54° 18.6'	131° 25.0'	+	-	-	-
36	-	-	1225/16	54° 15.7'	131° 26.2'	+	-	-	-
37	-	-	1330/16	54° 06.2'	131° 19.7'	+	-	-	-
38	-	-	1430/16	53° 55.0'	131° 16.5'	+	-	-	-
39	-	-	1540/16	53° 41.5'	131° 13.0'	+	-	-	-
40	-	-	1655/16	53° 28.0'	131° 08.5'	+	-	-	-
41	-	-	1830/16	53° 12.5'	131° 06.5'	+	-	-	-
42	-	-	1930/16	53° 01.0'	131° 06.5'	+	-	-	-
43	-	-	2050/16	52° 48.0'	130° 59.0'	+	-	-	-
44	-	-	2215/16	52° 34.0'	130° 53.0'	+	-	-	-
45	-	-	2330/16	52° 19.9'	130° 45.7'	+	-	-	-
46	-	-	0043/17	52° 07.7'	130° 39.0'	+	-	-	-
15	-	-	0150/17	52° 00.0'	130° 31.0'	+	-	+	-
-	3-4	-	1420/17	51° 49.5'	129° 07.7'	+	-	-	-
-	-	1	1715/17	51° 39.0'	129° 21.1'	-	+	-	G
-	-	2	1730/17	51° 41.1'	129° 18.5'	-	-	-	S
-	-	3	1750/17	51° 42.8'	129° 17.2'	-	-	-	G
-	-	4	1800/17	51° 43.1'	129° 16.9'	-	+	-	S
-	-	5	1810/17	51° 43.5'	129° 16.4'	-	+	-	S
-	-	6	1825/17	51° 43.9'	129° 16.0'	-	-	-	S
-	-	7	1845/17	51° 46.3'	129° 13.5'	-	+	-	S
-	-	8	1915/17	51° 49.0'	129° 10.6'	-	-	-	S
-	-	9	1940/17	51° 52.0'	129° 07.4'	-	+	-	S
-	-	10	2005/17	51° 55.0'	129° 04.1'	-	-	-	S
-	-	11	2033/17	51° 58.1'	129° 00.8'	-	+	-	S
-	-	12	2053/17	51° 59.8'	128° 58.9'	-	+	-	S
-	-	13	2105/17	52° 00.2'	128° 58.6'	-	+	-	S

Appendix Table 9. (cont'd)

Station No.	Haul No.	Shipek Sample No.	Time/date	Position		Observation[a]			
				Lat.	Long.	XBT	BT	NAN	BOTT
-	-	14	0950/18	51° 53.9'	128° 36.5'	-	-	-	S
-	-	15	1005/18	51° 54.1'	128° 37.2'	-	-	-	G
-	-	16	1015/18	51° 54.2'	128° 38.2'	-	-	-	M
-	-	17	1030/18	51° 54.5'	128° 38.9'	-	-	-	S
-	-	18	1035/18	51° 54.8'	128° 39.6'	-	+	-	M
-	-	19	0830/20	51° 33.8'	129° 14.0'	-	+	-	G
-	-	20	1405/20	51° 24.7'	129° 15.6'	-	+	-	S
-	8	21	1030/21	50° 57.8'	128° 59.1'	-	+	-	S
-	9	22	1400/21	50° 57.1'	129° 12.4'	-	+	-	S
-	11	23	0905/22	51° 00.5'	128° 15.6'	-	+	-	S
-	12	24	1130/22	51° 01.1'	128° 15.1'	-	+	-	S
-	13	25	1330/22	51° 01.1'	128° 12.0'	-	+	-	S
-	14	26	0925/23	51° 05.4'	128° 32.2'	-	+	-	S
-	16	27	1320/23	51° 05.2'	128° 35.8'	-	+	-	S
-	17	28	1505/23	51° 03.6'	128° 36.2'	-	+	-	S
-	18	29	1000/24	51° 08.0'	128° 52.9'	-	+	-	S
8	-	-	1320/24	51° 06.8'	129° 37.2'	+	-	+	-
9	-	-	1555/24	51° 21.5'	129° 48.4'	+	-	-	-
10	-	-	1810/24	51° 36.0'	130° 02.5'	+	-	+	-
11	-	-	1945/24	51° 44.0'	129° 48.5'	+	-	-	-
12	-	-	2055/24	51° 51.8'	129° 39.8'	+	-	-	-
13	-	-	2210/24	52° 00.0'	129° 29.8'	+	-	+	-
A	-	-	2310/24	51° 52.4'	129° 22.9'	+	-	-	-
B	-	-	2350/24	51° 46.8'	129° 16.6'	+	-	-	-
C	-	-	0030/25	51° 41.5'	129° 10.3'	+	-	-	-
D	-	-	0150/25	51° 31.0'	128° 57.0'	+	-	-	-
5	-	-	1249/25	51° 22.7'	128° 45.0'	+	-	+	-
2	-	-	0345/25	51° 15.0'	128° 40.0'	+	-	-	-
-	24	30	0950/27	51° 04.1'	128° 39.5'	-	+	-	S
-	26	-	1255/27	51° 06.0'	128° 36.8'	-	+	-	-

[a]BOTT = surficial sediment (G = gravel; M = mud; S = sand); BT = bathythermograph; NAN = Nansen bottle; XBT = expendable bathythermograph; + = yes; - = no.

Appendix Table 10. Corner locations for echo sounder scouting tracklines completed on Goose Island Bank and Cook Bank during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Survey no.	Bank[a]	Time/date	Depth (fm)	Dir. (°T)	LORAN X	LORAN Z	N. lat.	W. long.
0-A	GIB	1230/14	107	031	13420	41218	51°25.3'	128°50.9'
B		1313	45	270	13420	41240	51°28.6'	128°47.6'
C		1329	43	210	13400	41235	51°28.6'	128°51.7'
D		1409	103	270	13400	41214	51°25.2'	128°54.9'
E		1434	106	031	13380	41206	51°24.0'	128°59.5'
F		1521	45	270	13380	41230	51°28.3'	128°56.0'
G		1543	45	210	13360	41224	51°27.8'	129°00.3'
H		1625	103	250	13360	41204	51°24.3'	129°03.8'
I		1652	103	031	13340	41195	51°23.1'	129°08.8'
J		1731	42	270	13339	41214	51°26.6'	129°05.8'
K		1749	44	210	13320	41211	51°26.5'	129°09.8'
L		1838	100	250	13320	41186	51°21.7'	129°14.7'
M		1905	103	032	13300	41178	51°20.4'	129°19.9'
N		2018	43	-	13300	41207	51°26.6'	129°13.7'
1-A	GIB	2353/14	52	290	13270	41300	51°43.5'	129°02.7'
B		0230/15	108	046	13125	41300	51°48.6'	129°26.3'
C		0312	112	110	13134	41320	51°51.7'	129°21.2'
D		0517	50	016	13259	41320	51°47.3'	129°00.8'
E		0552	41	290	13251	41340	51°50.4'	128°59.0'
F		0757	106	045	13145	41340	51°54.6'	129°15.7'
G		0835	99	114	13155	41360	51°57.5'	129°10.0'
H		0948	46	028	13239	41360	51°53.9'	128°57.9'
I		1020	52	300	13235	41380	51°57.1'	128°55.4'
J		1153/16	93	-	13149	41380	52°00.7'	129°08.3'
2-A	GIB	2215/17	95	213	13240	41400	51°59.8'	128°51.0'
B		2315	48	115	13240	41360	51°53.7'	128°57.6'
C		2333	40	033	13260	41360	51°53.0'	128°54.4'
D		0048/18	97	117	13260	41400	51°58.7'	128°48.6'
E		0107	90	213	13280	41400	51°57.8'	128°45.7'
F		0209	28	115	13280	41360	51°52.2'	128°51.6'
G		0231	40	033	13300	41360	51°51.3'	128°48.6'
H		0347	84	117	13300	41400	51°56.9'	128°43.0'
I		0406	84	213	13320	41400	51°56.0'	128°40.1'
J		0513	42	115	13320	41360	51°50.5'	128°45.7'
K		0535	53	033	13340	41360	51°49.6'	128°42.8'
L		0638	81	117	13340	41400	51°55.1'	128°37.1'
M		0700	61	213	13360	41400	51°54.1'	128°34.3'
N		0858	39	-	13360	41340	51°45.9'	128°42.4'

Appendix Table 10 (cont'd)

Survey no.	Bank	Time/date	Depth (fm)	Dir. (°T)	LORAN X	LORAN Z	N. lat.	W. long.
3-A	GIB	1830/18	20	108	13420	41260	51°31.7'	128°44.5'
B		1937	104	209	13480	41260	51°29.7'	128°34.8'
C		1957	110	288	13480	41250	51°28.3'	128°36.3'
D		2100	24	211	13420	41250	51°30.3'	128°46.2'
E		2117	46	108	13420	41240	51°28.7'	128°47.5'
F		2215	116	209	13480	41240	51°26.6'	128°37.7'
G		2230	119	288	13480	41230	51°25.2'	128°39.3'
H		2332	73	-	13420	41230	51°27.1'	128°49.1°
4-A	GIB	2005/19	47	212	13280	41205	51°26.4'	129°18.2'
B		2040	69	280	13280	41190	51°23.4'	129°21.4'
C		2103	75	033	13259	41190	51°23.8'	129°25.0'
D		2147	41	282	13260	41210	51°27.9'	129°20.8'
E		2210	47	213	13240	41210	51°28.3'	129°24.4'
F		2309	81	282	13240	41190	51°24.2'	129°28.7'
G		2330	82	033	13220	41190	51°24.8'	129°32.3'
H		0029/20	44	282	13220	41215	51°29.9'	129°26.9'
I		0058	52	213	13200	41215	51°30.3'	129°30.6'
J		0137	78	281	13200	41200	51°27.3'	129°33.9'
K		0202	85	034	13180	41200	51°27.5'	129°37.8'
L		0300	51	282	13180	41220	51°31.8'	129°33.3'
M		0357	80	340	13130	41220	51°33.1'	129°42.7'
N		0423	84	103	13110	41230	51°35.7'	129°44.0'
O		0552	46	005	13170	41230	51°34.1'	129°33.0'
P		0618	51	282	13160	41240	51°36.5'	129°32.7'
Q		0828	24	212	13260	41240	51°33.8'	129°14.0'
R		1037	68	102	13260	41195	51°25.0'	129°23.0'
S		1101	64	032	13280	41195	51°24.4'	129°19.5'
T		1212	26	004	13280	41230	51.31.4'	129°12.3'
U		1235	28	212	13300	41230	51°30.6'	129°09.4'
V		1359	60	-	13300	41199	51°24.7'	129°15.6'
5-A	CB	1607/20	70	096	13455	41130	51°07.4'	129°00.5'
B		1737	40	208	13520	41130	51°06.5'	128°47.9'
C		1805	34	275	13520	41120	51°04.6'	128°49.9'
D		1953	75	211	13440	41120	51°05.2'	129°05.5'
E		2020	72	093	13440	41110	51°02.8'	129°07.3'
F		2150	34	208	13521	41110	51°02.1'	128°51.4'
G		2222	35	274	13520	41100	50°59.9'	128°53.8'
H		0020/21	76	210	13440	41100	51°00.6'	129°09.3'
I		0049	74	091	13440	41090	50°57.7'	129°11.8'
J		0229	35	209	13521	41090	50°57.6'	128°55.2'
K		0252	38	268	13520	41080	50°54.8'	128°57.5'
L		0515	94	-	13410	41080	50°54.5'	129°21.0'

Appendix Table 10 (cont'd)

Survey no.	Bank	Time/date	Depth (fm)	Dir. (°T)	LORAN X	LORAN Z	N. lat.	W. long.
6-A	CB	1954/21	50	026	13660	41105	50°59.8'	128°25.1'
B		2044	90	101	13660	41130	51°04.4'	128°21.6'
C		2055	90	206	13671	41130	51°04.2'	128°19.7'
D		2147	47	097	13670	41105	50°59.6'	128°23.3'
E		2203	41	027	13680	41105	50°59.6'	128°21.3'
F		2250	93	101	13680	41130	51°03.9'	128°17.8'
G		2301	94	206	13690	41130	51°03.8'	128°16.1'
H		2354	34	097	13690	41105	50°59.5'	128°19.5'
I		0016/22	35	026	13700	41105	50°59.2'	128°17.8'
J		0058	35	101	13700	41130	51°03.6'	128°14.3'
K		0108	96	206	13711	41130	51°03.4'	128°12.6'
L		0200	45	097	13710	41105	50°59.1'	128°15.9'
M		0213	44	026	13720	41105	50°59.0'	128°14.0'
N		0248	90	101	13720	41125	51°02.4'	128°11.5'
O		0259	95	206	13731	41125	51°02.1'	128°09.8'
P		0335	42	097	13730	41105	50°58.8'	128°12.3'
Q		0347	37	026	13740	41105	50°58.6'	128°10.4'
R		0416	81	101	13740	41120	51°01.1'	128°08.6'
S		0428	80	206	13750	41120	51°00.9'	128°06.8'
T		0452	33	026	13750	41104	50°58.4'	128°08.6'
U		0510	40	-	13750	41110	50°59.2'	128°08.0'
7-A	CB	0027/23	86	207	13650	41130	51°04.6'	128°23.2'
B		0124	55	277	13650	41105	51°00.0'	128°27.0'
C		0140	49	027	13640	41105	51°00.1'	128°28.9'
D		0228	35	277	13640	41130	51°04.8'	128°25.0'
E		0240	33	207	13630	41130	51°05.1'	128°26.8'
F		0330	50	277	13630	41105	51°00.2'	128°30.8'
G		0343	47	027	13620	41105	51°00.4'	128°32.6'
H		0505	85	277	13619	41135	51°06.1'	128°28.1'
I		0520	80	207	13609	41135	51°06.3'	128°29.8'
J		0615	42	277	13610	41105	51°00.5'	128°34.5'
K		0628	39	027	13600	41105	51°00.5'	128°36.4'
L		0803	77	-	13600	41137	51°06.5'	128°31.6'
M		1550	74	207	13590	41136	51°06.5'	128°33.4'
N		1641	41	276	13590	41110	51°01.8'	128°37.5'
O		1655	38	028	13580	41110	51°01.9'	128°39.4'
P		1807	76	280	13580	41139	51°08.8'	128°33.6'
Q		1820	73	208	13570	41140	51°08.9'	128°35.4'
R		1900	41	278	13570	41120	51°04.1'	128°39.5'
S		1912	37	027	13560	41120	51°04.2'	128°41.5'
T		2039	95	279	13560	41155	51°10.9'	128°35.9'
U		2049	92	208	13550	41155	51°11.1'	128°37.6'
V		2137	36	277	13550	41130	51°06.4'	128°41.6'
W		2150	35	028	13540	41130	51°06.5'	128°43.5'
X		2300	100	282	13540	41160	51°12.2'	128°38.6'
Y		2312	97	209	13530	41160	51°12.4'	128°40.4'
Z		0013/24	37	-	13530	41130	51°06.7'	128°45.4'

Appendix Table 10 (cont'd).

Survey no.	Bank	Time/day	Depth (fm)	Dir. (°T)	LORAN X	LORAN Z	N. lat.	W. long.
8-A	CB	0028/24	42	029	13520	41130	51°06.9'	128°47.2'
B		0150	103	281	13520	41165	51°13.6'	128°41.3'
C		0205	102	209	13510	41165	51°13.8'	128°43.1'
D		0318	46	277	13510	41130	51°07.0'	128°49.0'
E		0337	49	029	13500	41129	51°07.2'	128°51.0'
F		0455	106	281	13500	41165	51°14.0'	128°44.9'
G		0507	108	209	13490	41165	51°14.3'	128°46.6'
H		0624	53	-	13490	41130	51°07.2'	128°52.8'
9-A	CB	0512/25	42	096	13620	41100	50°59.3'	128°33.5'
B		0614	42	207	13670	41100	50°58.7'	128°24.1'
C		0624	36	274	13670	41095	50°57.7'	128°24.9'
D		0717	36	207	13620	41095	50°58.1'	128°34.5'
E		0727	35	094	13620	41090	50°57.1'	128°35.1'
F		0827	34	207	13670	41090	50°56.6'	128°25.6'
G		0839	32	273	13670	41085	50°55.5'	128°26.6'
H		0938	47	207	13620	41085	50°55.7'	128°36.5'
I		0944	35	094	13620	41080	50°54.7'	128°37.1'
J		1045	27	207	13670	41080	50°54.3'	128°27.2'
K		1055	27	273	13670	41075	50°53.3'	128°28.4'
L		1150	35	-	13620	41075	50°53.4'	128°38.3'
10-A	CB	1150/25	35	273	13620	41075	50°53.4'	128°38.3'
B		1340	46	028	13530	41075	50°53.3'	128°56.7'
C		1407	38	091	13530	41085	50°56.2'	128°54.3'
D		1542	45	027	13620	41085	50°55.7'	128°36.2'
E		1606	37	273	13620	41095	50°58.2'	128°34.2'
F		1810	37	028	13530	41095	50°58.8'	128°52.0'
G		1835	33	094	13530	41105	51°01.1'	128°49.9'
H		1950	38	028	13592	41105	51°00.6'	128°38.1'
I		2010	43	273	13590	41115	51°02.7'	128°36.8'
J		2115	31	026	13530	41115	51°03.6'	128°48.2'
K		2140	35	094	13530	41125	51°05.6'	128°46.2'
L		2215	37	-	13560	41125	51°05.1'	128°40.4'
M		2023/26	33	096	13530	41120	51°04.6'	128°47.1'
N		2040	51	207	13590	41120	51°03.6'	128°35.8'
O		2200	41	276	13590	41110	51°01.7'	128°37.5'
P		2307	33	-	13530	41110	51°02.3'	128°49.3'

Appendix Table 10 (cont'd)

Survey no.	Bank	Time/date	Depth (fm)	Dir. (°T)	LORAN X	LORAN Z	N. lat.	W. long.
11-A	CB	2332/26	46	335	13495	41120	51°05.3'	128°53.9'
B		0053/27	77	078	13440	41147	51°11.8'	128°58.9'
C		0107	75	154	13450	41150	51°12.1'	128°56.5'
D		0150	56	032	13485	41132	51°07.9'	128°53.4'
E		0205	61	334	13485	41139	51°09.5'	128°51.9'
F		0250	80	052	13454	41155	51°13.1'	128°54.7'
G		0307	93	153	13460	41160	51°13.9'	128°53.0'
H		0346	64	-	13490	41145	51°10.5'	128°50.0'
12-A	CB	1417/27	32	206	13680	41100	50°58.6'	128°22.2'
B		1520	34	092	13680	41074	50°53.0'	128°26.6'
C		1531	26	026	13690	41074	50°53.0'	128°24.7'
D		1621	31	096	13690	41100	50°58.5'	128°20.4'
E		1631	40	206	13700	41100	50°58.4'	128°18.5'
F		1743	27	092	13700	41070	50°52.1'	128°23.3'
G		1753	23	026	13710	41070	50°52.0'	128°21.4'
H		1855	50	097	13710	41100	50°58.2'	128°16.7'
I		1903	40	207	13720	41100	50°58.0'	128°14.8'
J		2003	22	097	13720	41070	50°52.0'	128°19.4'
K		2015	23	026	13730	41070	50°52.0'	128°17.4'
L		2122	35	097	13730	41100	50°57.9	128°13.0'
M		2131	32	207	13741	41100	50°57.7'	128°11.1'
N		2226	18	097	13740	41070	50°51.9'	128°15.5'
O		2240	13	026	13750	41070	50°51.8'	128°13.6'
P		2342	27	097	13750	41100	50°57.5'	128°09.4'
Q		2354	21	-	13760	41100	50°57.4'	128°07.5'

[a]CB = Cook Bank
GIB= Goose Island Bank.

Appendix Table 11. Temperatures (°C) determined from expendable bathythermograph readings taken at designated oceanographic stations during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Stn. no.	Standard depths (m)												Bottom	
	0	10	20	30	50	75	100	125	150	200	250	300	°C	(depth)
01	12.8	12.6	11.8	11.2	8.7	7.8	6.9	6.6	6.2	-	-	-	6.2	(180)
05	13.4	13.4	12.8	11.1	8.2	7.8	7.2	6.4	6.2	6.0	-	-	5.9	(219)
13	12.4	12.6	12.4	12.3	10.1	8.3	8.2	7.3	6.7	6.1	-	-	6.1	(225)
17	12.8	12.8	12.6	11.4	10.0	8.8	7.9	7.5	7.0	6.2	5.7	5.6	5.1	(510)
18	12.6	12.4	12.4	12.1	9.8	8.2	7.2	6.8	6.2	5.7	5.3	-	5.2	(293)
19	12.1	11.8	11.8	11.5	10.7	8.6	7.1	6.4	6.2	5.6	4.9	-	4.8	(280)
20	12.7	12.3	12.3	12.3	9.3	7.6	7.1	6.5	6.2	5.6	-	-	5.2	(243)
21	12.1	11.8	11.8	11.8	8.9	7.8	7.4	6.5	6.2	5.9	-	-	5.4	(224)
23	11.7	11.5	11.5	11.0	8.1	7.4	6.8	6.6	6.1	-	-	-	6.0	(183)
24	12.1	11.9	11.9	11.8	9.2	8.6	7.7	-(malfunction)-			-	-	-	-
25	11.3	11.2	11.3	10.0	8.2	7.1	6.7	-	-	-	-	-	6.6	(133)
26	11.6	11.6	11.7	11.6	8.0	7.1	-	-	-	-	-	-	6.8	(95)
27	11.3	11.2	11.2	10.0	9.2	7.9	-	-	-	-	-	-	7.9	(93)
28A	11.4	10.7	10.6	10.6	10.0	9.2	8.3	-	-	-	-	-	-	(100)
30	11.8	11.3	11.2	10.5	9.5	7.9	7.3	-	-	-	-	-	-	(100)
30A	11.3	9.9	9.6	9.1	8.3	7.7	-	-	-	-	-	-	6.9	(87)
33	11.7	10.1	9.4	8.3	7.7	6.9	6.3	6.0	5.9	5.8	5.6	-	5.6	(260)
34	11.6	11.1	10.1	10.1	7.8	7.8	6.8	6.2	6.0	-	-	-	5.9	(184)
35	10.7	10.2	10.3	10.2	10.1	8.7	7.2	6.4	-	-	-	-	-	(125)
36	10.9	10.5	10.5	10.5	-	-	-	-	-	-	-	-	10.4	(34)
37	10.9	10.7	10.5	10.5	-	-	-	-	-	-	-	-	-	(30)
38	12.3	12.2	12.2	-	-	-	-	-	-	-	-	-	12.2	(25)
39	12.5	12.1	12.0	11.7	-	-	-	-	-	-	-	-	10.7	(38)
40	12.7	12.1	12.0	11.0	9.3	-	-	-	-	-	-	-	-	(50)
41	12.5	11.8	11.4	10.3	-	-	-	-	-	-	-	-	10.2	(47)
42	12.4	12.0	11.6	10.2	-	-	-	-	-	-	-	-	10.0	(40)
43	12.6	11.8	11.7	11.1	-	-	-	-	-	-	-	-	10.8	(43)
44	12.1	12.1	12.1	12.1	9.2	7.8	7.2	6.9	-	-	-	-	-	(125)
45	12.8	12.4	11.8	11.3	8.8	7.4	6.7	6.3	-	-	-	-	6.3	(143)
46	12.9	12.3	10.7	10.0	8.3	7.3	6.8	6.7	6.3	5.7	-	-	-	(200)

Appendix Table 11 (cont'd)

Stn. no.	Standard depths (m)												Bottom	
	0	10	20	30	50	75	100	125	150	200	250	300	°C	(Depth)
15	13.0	12.6	10.7	9.4	8.3	7.3	6.8	6.3	6.0	5.7	5.4	5.3	4.9	(386)
08	13.3	13.0	12.4	11.1	8.0	7.2	7.1	7.1	6.7	5.8	5.7	5.6	5.1	(373)
09	13.3	12.8	10.6	10.3	9.2	7.8	7.3	6.8	6.3	5.8	-	-	5.8	(227)
10	13.0	12.6	12.0	11.0	7.9	7.2	6.5	6.5	6.5	5.8	5.8	5.4	5.0	(338)
11	13.5	13.2	10.9	9.8	8.7	7.5	7.1	6.4	6.2	5.8	5.6	5.3	5.3	(326)
12	13.7	13.6	13.5	?	?	?	(malfunction)		?	?	?	-	?	(260)
13	13.1	12.7	11.7	10.1	8.2	7.5	6.9	6.6	6.0	5.9	-	-	5.9	(205)
A	14.0	14.0	12.9	10.5	8.0	7.4	6.9	6.3	(malfunction)		-	-	?	(217)
B	14.0	13.8	12.6	11.4	8.3	7.7	6.3	-	-	-	-	-	6.2	(114)
C	13.5	13.2	11.3	9.2	8.2	-	-	-	-	-	-	-	8.2	(56)
D	13.4	12.7	10.5	9.2	-	-	-	-	-	-	-	-	8.3	(45)
5	13.4	11.5	10.3	9.1	8.4	7.7	7.2	6.7	6.4	6.2	-	-	6.1	(220)
2	13.9	13.4	11.8	10.0	8.9	8.2	7.3	6.9	6.5	-	-	-	6.4	(187)

Appendix Table 12. Temperatures (°C) determined from mechanical bathythermograph readings taken in Queen Charlotte Sound during G.B. REED Groundfish Cruise No. 82-2, July 12-29, 1982.

Sample no.	Tow no.	Standard depths (m)										Bottom	
		0	10	20	30	50	75	100	125	150	200	°C	(Depth)
01		12.7	12.4	12.2	11.6	9.7	-	-	-	-	-	9.3	(58)
04		12.6	12.4	11.8	11.4	9.6	8.4	-	-	-	-	8.4	(77)
05		12.9	12.3	12.1	10.6	9.4	8.0	-	-	-	-	7.4	(96)
07		13.1	12.9	12.2	11.5	9.5	8.2	6.5	-	-	-	6.3	(114)
09		12.8	12.4	12.3	11.0	9.0	8.0	7.2	6.7	-	-	6.7	(127)
11		13.4	13.4	12.6	12.1	8.9	8.2	7.4	7.1	-	-	6.8	(131)
12		13.6	13.5	12.7	12.4	9.1	8.0	7.4	6.9	6.7	-	6.7	(155)
13		13.6	13.5	12.7	12.4	8.9	8.1	7.3	6.8	6.7	-	6.6	(175)
18		13.7	13.7	12.5	12.0	8.9	7.7	7.1	6.7	6.5	-	6.4	(160)
19		12.8	12.7	12.3	10.7	10.6	-	-	-	-	-	-	(50)
20		13.7	13.2	12.7	9.9	7.9	7.2	6.9	-	-	-	6.4	(113)
21	08	13.1	12.1	10.7	9.9	8.7	-	-	-	-	-	7.6	(74)
22	09	13.4	12.7	11.6	10.6	9.1	7.7	6.5	-	-	-	6.4	(131)
23	11	12.6	9.7	9.9	9.7	8.9	7.8	-	-	-	-	7.3	(94)
24	12	12.6	10.1	9.9	9.7	8.4	7.6	7.3	-	-	-	6.5	(124)
25	13	13.3	13.0	10.5	8.9	7.7	7.0	6.5	6.3	-	-	-	(125)
26	14	13.2	13.1	10.5	8.8	7.7	7.1	6.5	6.4	-	-	6.4	(127)
27	16	13.6	13.4	12.0	10.2	8.4	7.7	7.1	-	-	-	6.5	(117)
28	17	13.6	13.2	11.0	9.8	8.7	8.1	-	-	-	-	7.0	(96)
29	18	13.4	13.4	10.5	8.8	7.9	7.7	6.8	-	-	-	6.8	(110)
30	24	12.8	11.3	10.0	9.3	7.9	7.2	-	-	-	-	7.1	(77)
-	26	14.1	12.0	10.7	9.7	8.2	7.0	6.8	-	-	-	-	(100)

Appendix Table 13. Salinities (‰), by salinometer, for water samples collected in Queen Charlotte Sound and Hecate Strait during G.B. REED Groundfish Cruise no. 82-2, July 12-29, 1982.

Standard depth (m)	Station number						
	5 QCS[a]	8 QCS	10 QCS	13 QCS	21 HS[a]	33 HS	46 HS
0	31.106	31.471	31.691	31.355	31.289	31.320	31.649
10	31.073	31.428	31.618	31.359	31.289	31.320	31.699
20	31.618	31.467	31.633	31.525	-	31.792	31.897
30	31.645	31.796	31.664	31.784	31.378	32.114	32.087
50	31.997	32.584	32.351	32.083	32.145	32.397	32.413
75	32.432	33.195	33.117	32.498	32.525	32.755	33.016
100	33.125	33.573	33.667	32.946	32.965	33.125	33.421
125	33.570	33.742	33.761	33.277	-	33.452	33.566
150	33.812	33.839	33.855	33.659	33.734	33.558	33.718
200	33.914	33.949	33.921	33.816	33.898	33.659	33.925
250	-	33.941	34.054	-	-	33.738	33.984
300	-	33.968	34.000	-	-	-	33.972

[a]HS = Hecate Strait; QCS = Queen Charlotte Sound